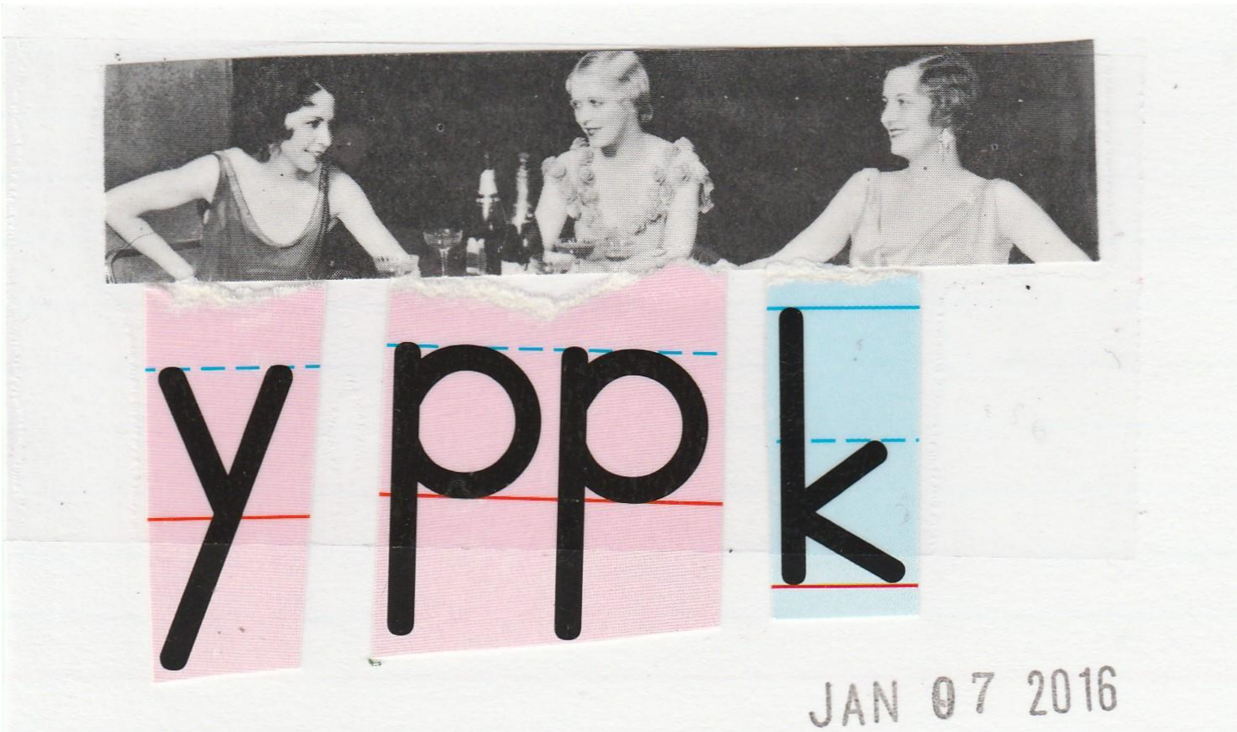
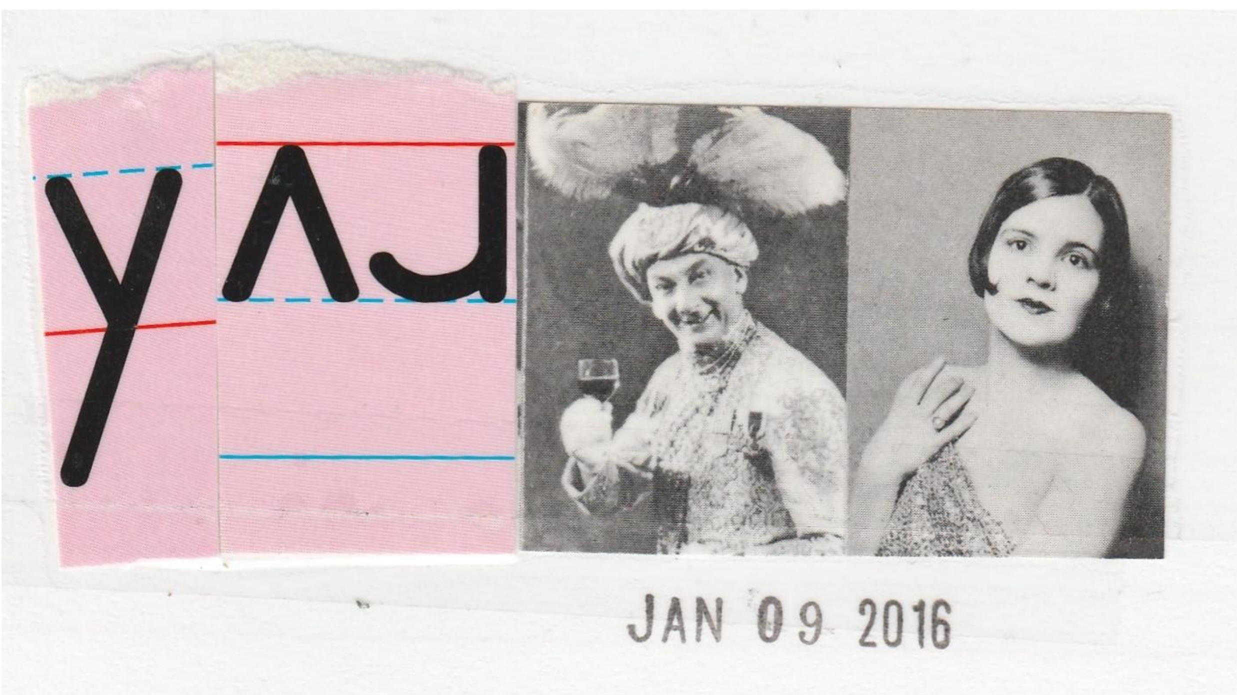
jim leftwich
visual poems ongoing research 2016 -vol. 6





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ticle \ˈrad-i-kəl\ *n.*
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CHEMISTRY and PHYSICS. isotopes nuclei that break up into two s a result of f within the nucleus. Each disinte companied by emission of alpha or beta, a mma, r Radioactive isotopes are also and *half-life.*

y element has at least ctive isotope may

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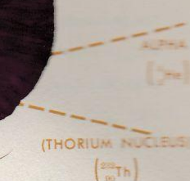
PHYSICS. C ceeding member of the preceding element. Ea element, such as lead or bismuth

The RADIOACTIVE SERIES *that starts with lead 206 after 13 intermediate steps.*

radioactivity \ˌrād-ē-ō-ˌak-ˈtiv-ət-ē\
CHEMISTRY and PHYSICS. The continuous emission of energetic subatomic particles (alpha or beta rays), or of gamma rays, from certain elements or isotopes of elements. It occurs as the result of radioactive decay; see *radioactive decay* and *curie.*

The RADIOACTIVITY *of an element is not affected by chemically combining it with a second element to form a compound.*



RADIOACTIVE DECAY

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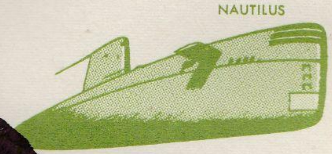
reagent \rē-ˈā-jənt\ *n.*
CHEMISTRY. Any chemical used to react with another substance. A reagent is frequently in the form of a solution; also, a substance of high purity used in chemical analysis.

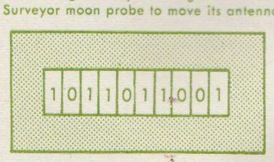
Hydrogen sulfide is often used as a REAGENT *to detect such metallic ions as lead and cadmium in an unknown solution.*

REACTION



REACTOR

This 10-digit binary word signals Surveyor moon probe to move its antenna



READOUT

ON DEVICE TRANSMITTING COMMANDS TO SPACECRAFT


JAN 07 2016

- Alignments of random points
- Clustering illusion
- Confirmation bias
- Constellation
- Droodles
- Forer effect
- Hindsight bias
- Hot-hand fallacy
- Pareidolia
- Perceptions of religious imagery in natural phenomena
- Ramsey theory
- Rorschach test
- Texas sharpshooter fallacy
- Ulam spiral

References

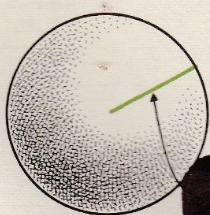
1. Conrad, Klaus (1958). *Die beginnende Schizophrenie. Versuch einer Gestaltanalyse des Wahns* (in German). Stuttgart: Georg Thieme Verlag. OCLC 14620263.
2. Brugger, Peter. "From Haunted Brain to Haunted Science: A Cognitive Neuroscience View of Paranormal and Pseudoscientific Thought", *Hauntings and Poltergeists: Multidisciplinary Perspectives*, edited by J. Houran and R. Lange (North Carolina: McFarland & Company, Inc. Publishers, 2001).
3. [illegible] 07-16. Retrieved 2012-07-16.
4. Hambrecht & Häfner (1993). ""Trema, apophany, apocalypse'--is Conrad's phase model empirically founded?". [illegible]
5. Mishara, Aaron (2010). "Klaus Conrad (1905–1961): Delusional Mood, Psychosis and Beginning Schizophrenia.". *Schizophr Bull* 36 (1). pp. 9–13.
6. [illegible]
7. Shermer, Michael. "Patternicity: Finding Meaningful Patterns in Meaningless Noise". Scientificamerican.com. Retrieved 2011-06-29.
8. GrrlScientist (29 September 2010). "Michael Shermer: The pattern behind self-deception". London: Guardian. Retrieved 2011-06-29.
9. "Why Do We Need a Belief in God with Michael Shermer". 2011-08-19.
10. Luke, David. "Experiential reclamation and first person parapsychology". Journal of Parapsychology. 75. 185–199.
11. Svoboda, Elizabeth (13 February 2007). "Facial Recognition – Brain – Faces, Faces Everywhere". New York Times. Retrieved July 2010.
12. "Apophenia". Medical-answers.org. Retrieved 2011-06-29.
13. [illegible] Waterstone.wordpress.com. Retrieved 2011-06-29.

Further reading

- [illegible] *Situation Awareness: Theory and Application* (1st ed.). USA: Ashgate Publishing, Ltd. ISBN 0-7546-4198-8.
- Gibson, William (2003). *Pattern Recognition*. New York: G. P. Putnam's Sons. ISBN 978-0-3991- [illegible]

usually included within those frequencies between 10 kilocycles per second and 30 million kilocycles per second.

If an electric cu ws through a wire, it will give s energy WAVE.



radium \ *n.*

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of a circle s = (pi).

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RAIN SHADOW

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A RAIN SHADOW *may of a mountain, depending on the prevailing winds.*

ramjet engine \'ram-ˌjet 'en-jən\

AERONAUTICS and ENGINEERING. A type of jet engine whose motion through the air causes air to be continuously compressed


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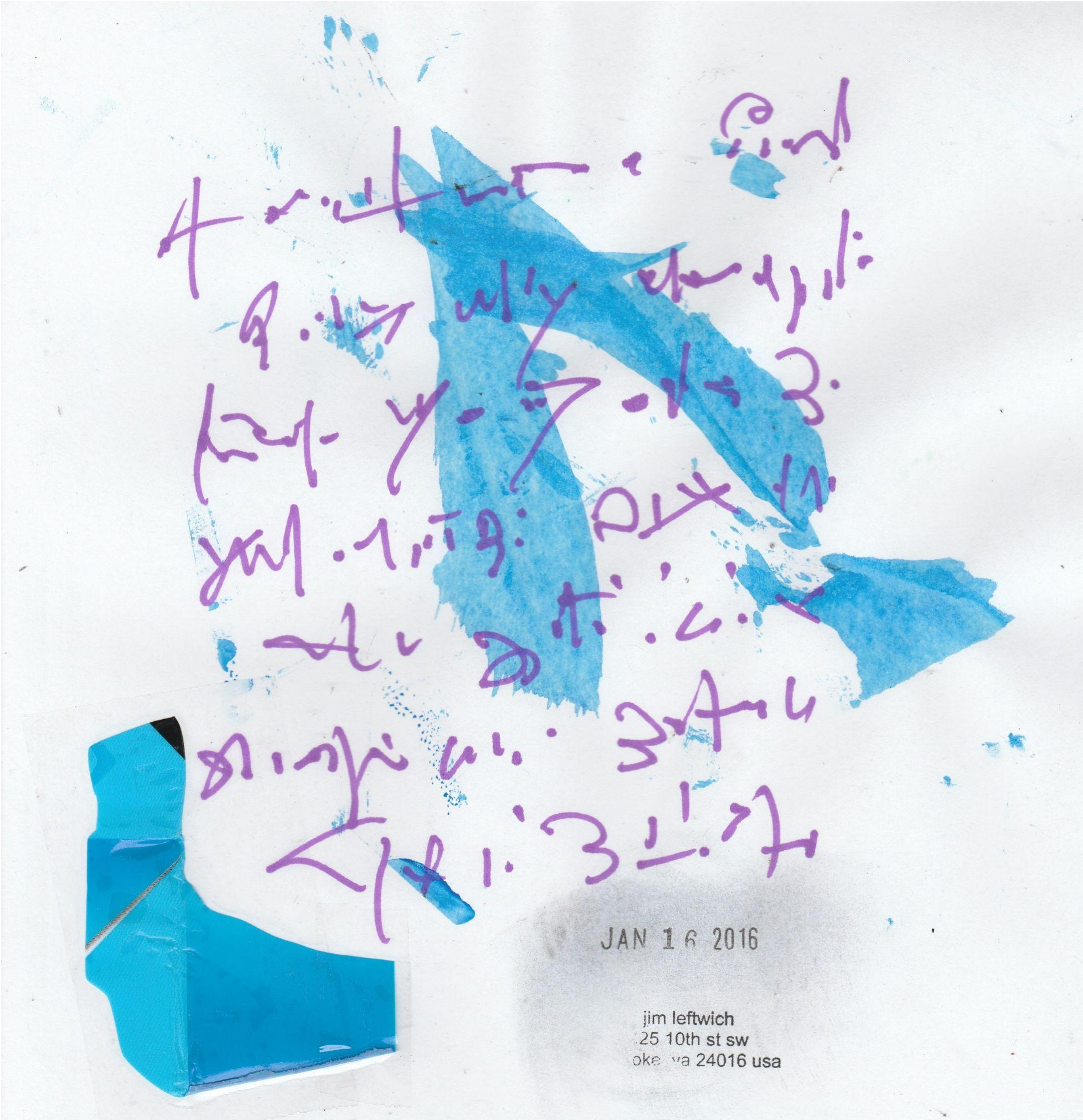
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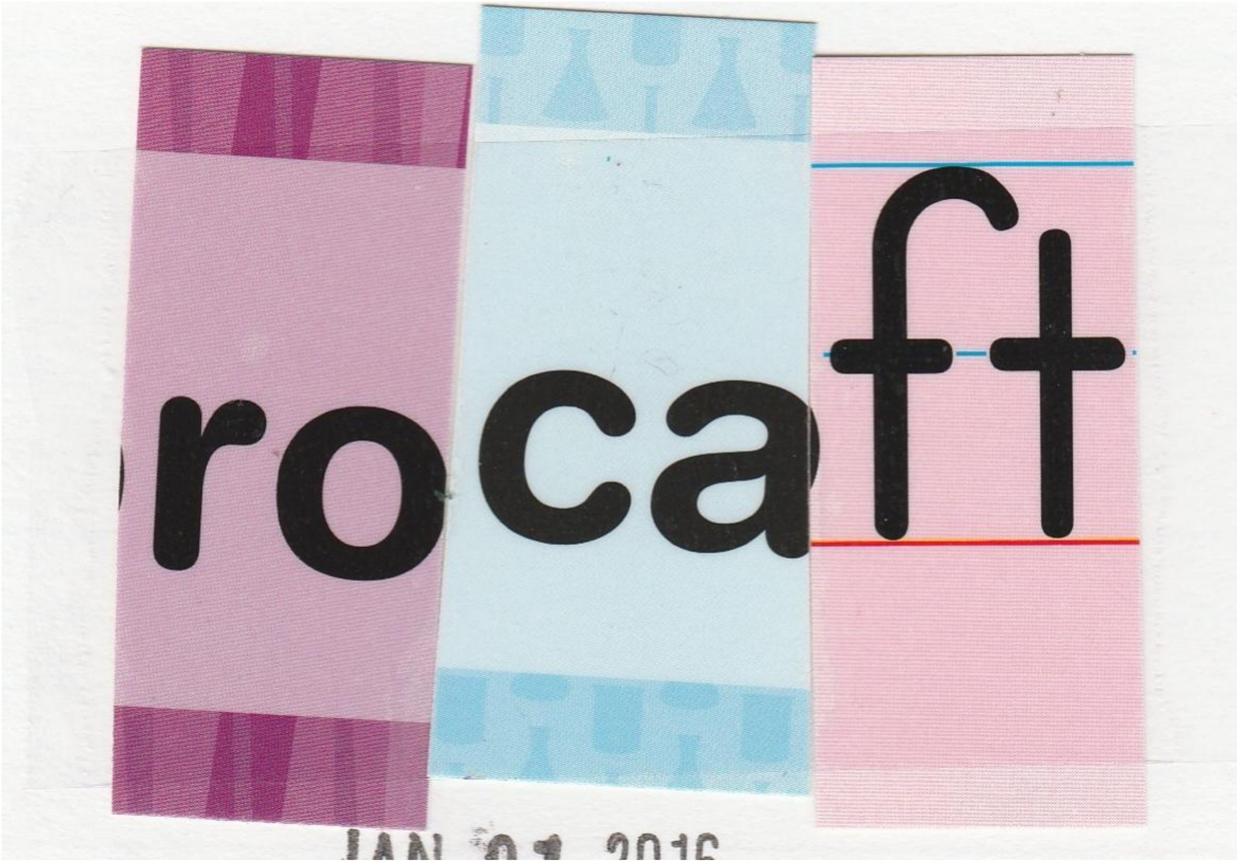
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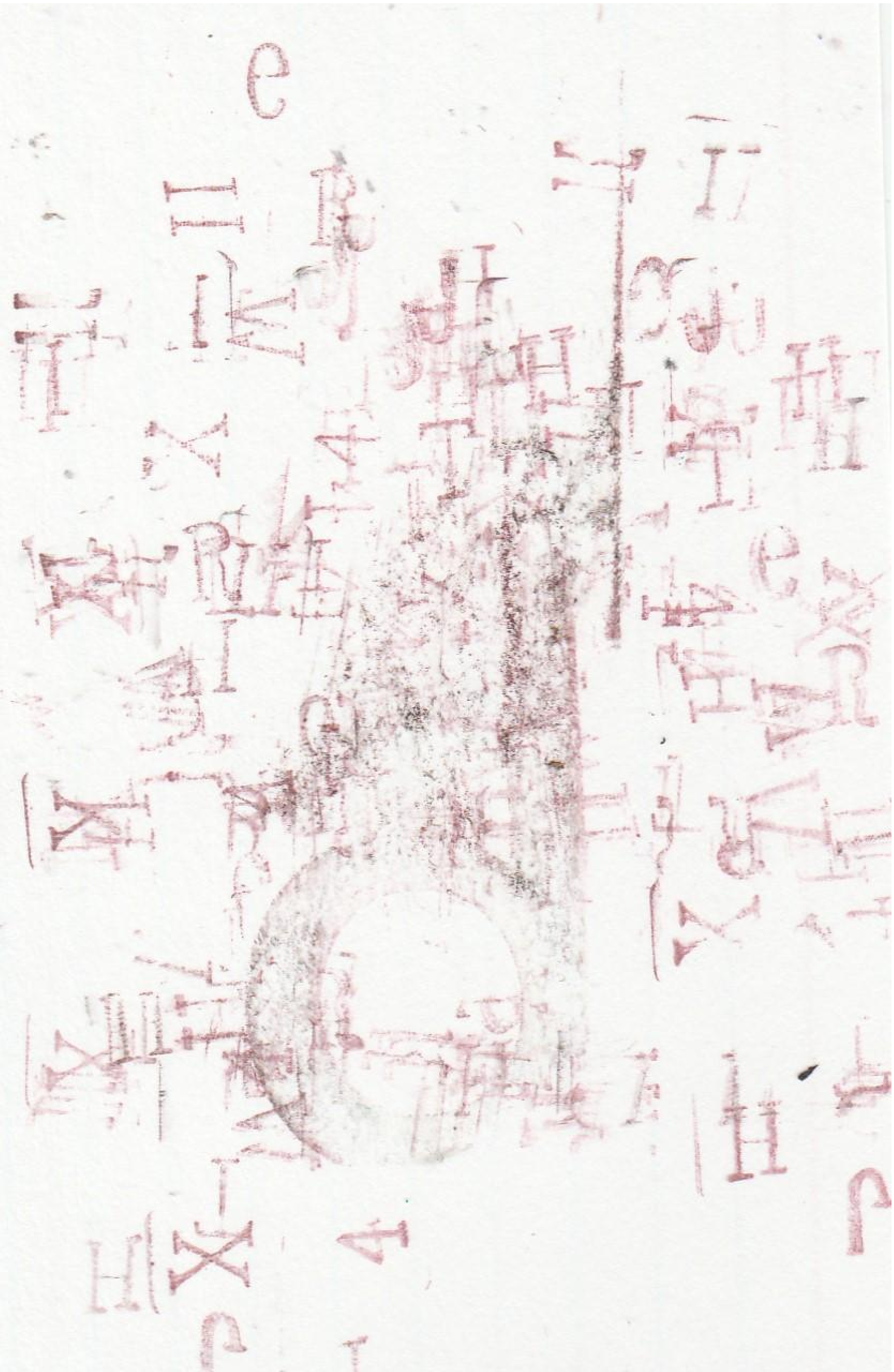

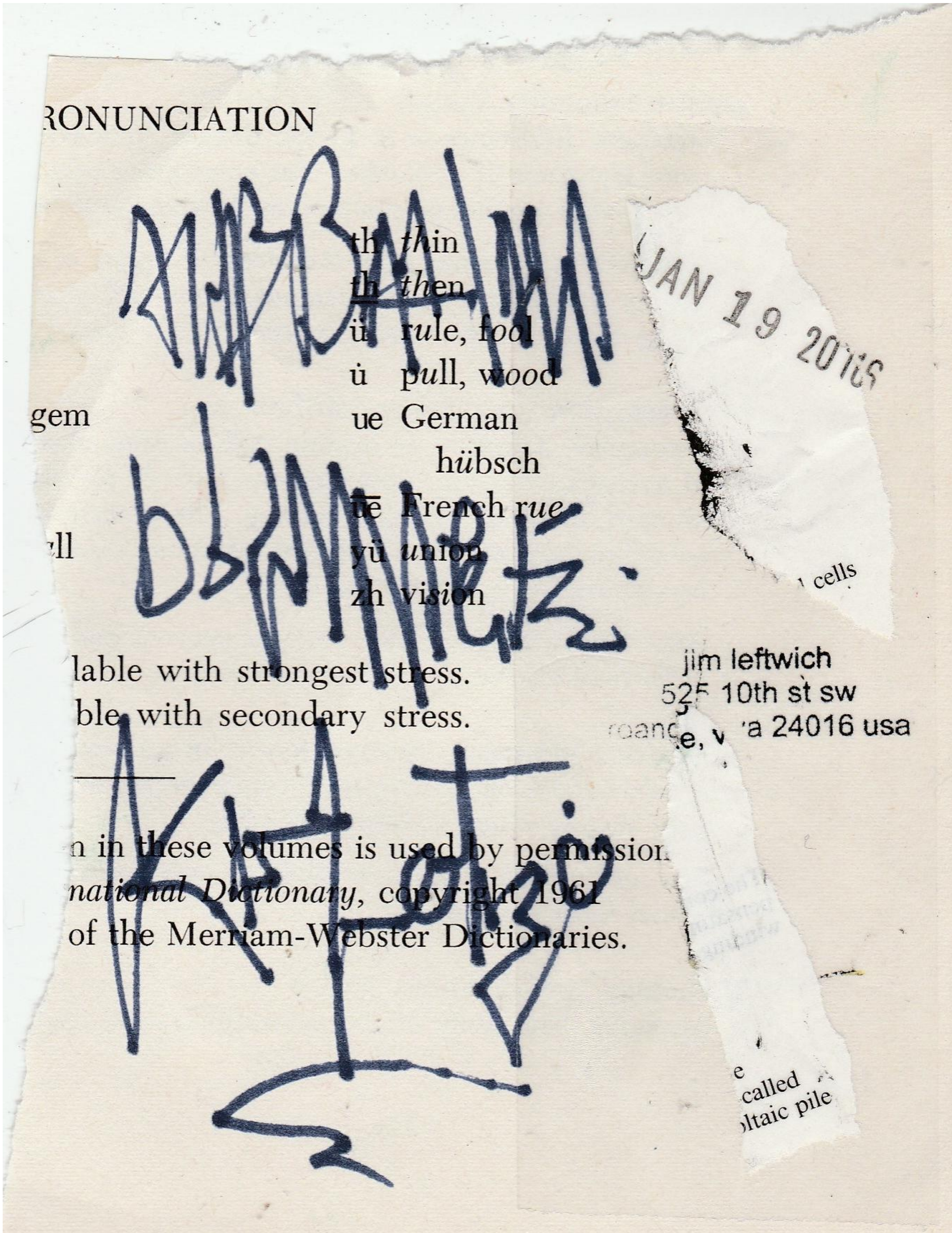

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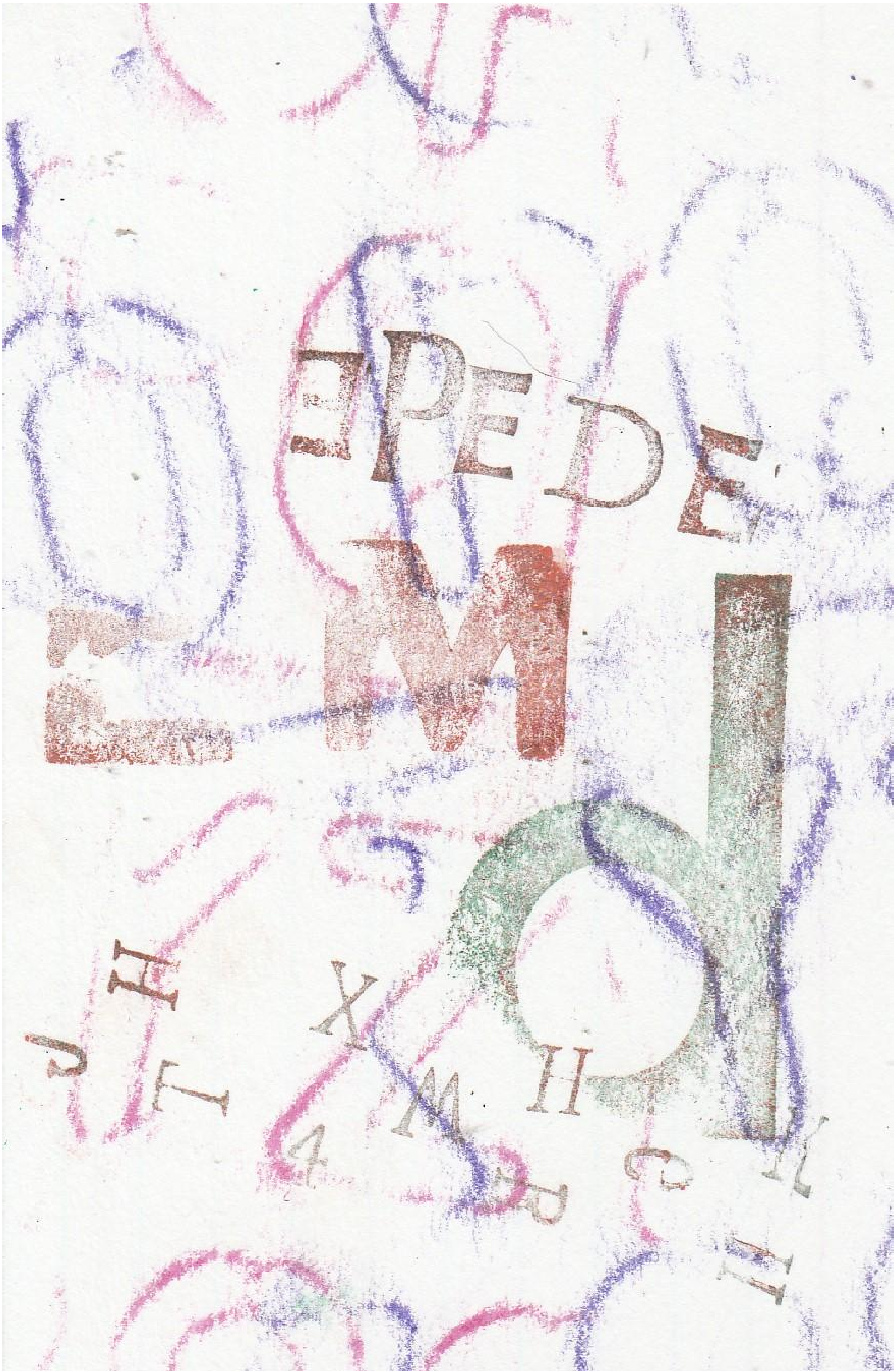
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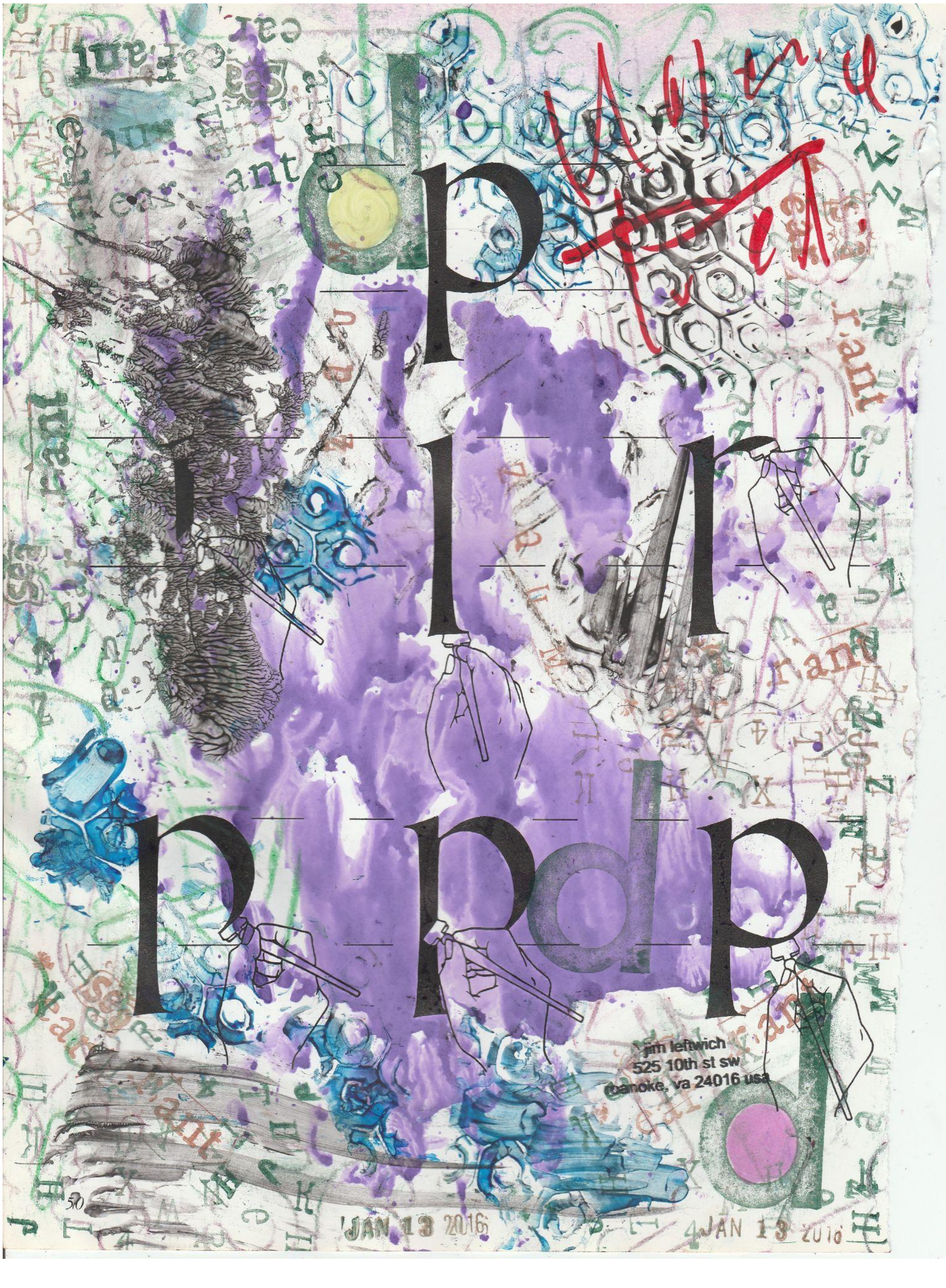
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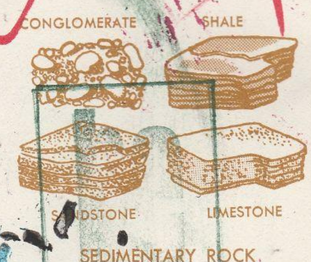
sediment \'sed-ə-mənt\ *n.*
1. CHEMISTRY. Solid material that will settle out of a liquid or that can be removed from the liquid by filtering. 2. EARTH SCIENCE. Solid material carried in suspension or deposited by water, wind or ice.

Although SEDIMENT *may be filtered from drinking water to make the water clear, disease-causing bacteria may still be present.*

sedimentary rock \,sed-ə-'ment-ə-rē 'räk\
EARTH SCIENCE. A rock or rock formation produced by deposits of sediment from older rocks, by an accumulation of plant or animal remains or by the products of chemical reactions and precipitates.

SEDIMENTARY ROCK *is always formed in, and is usually found in, layers or beds of rock.*



seed \'sēd\
1. BOTANY (N.). The ripened ovule of a flowering or cone-bearing plant, consisting of the embryo, one or more seed coats and stored food. 2. EARTH SCIENCE (V.). To introduce crystals or chemicals, such as silver iodide or dry ice, into a cloud in an attempt to cause rainfall; see *cloud seeding.*

A SEED *begins to grow only under certain conditions of temperature, moisture and air composition.*

seed plants \'sēd 'plants\
BOTANY. A large group of plants having flowers or cones, true roots, stems and leaves; spermatophytes.

Roses are flowering SEED PLANTS, *but pines are cone-bearing seed plants.*

segmentation \,seg-mən-'tā-shən\ *n.*
ZOOLOGY. The body structure of an organism made up of joined ringlike sections. The structure is typical of earthworms and insects and less noticeable in vertebrates.

SEGMENTATION *in an embryonic chicken can be seen 21 hours after fertilization.*

segregation \,seg-ri-'gā-shən\ *n.*
BIOLOGY. A genetic principle formulated by Gregor Mendel, stating that pairs of hereditary units carrying such characteristics as tallness or dwarfness separate during reproduction, so that each offspring receives one of each pair.

The eye-color genes of dark-eyed parents who are hybrid for

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THE ILLUSTRATED SCIENCE DICTIONARY

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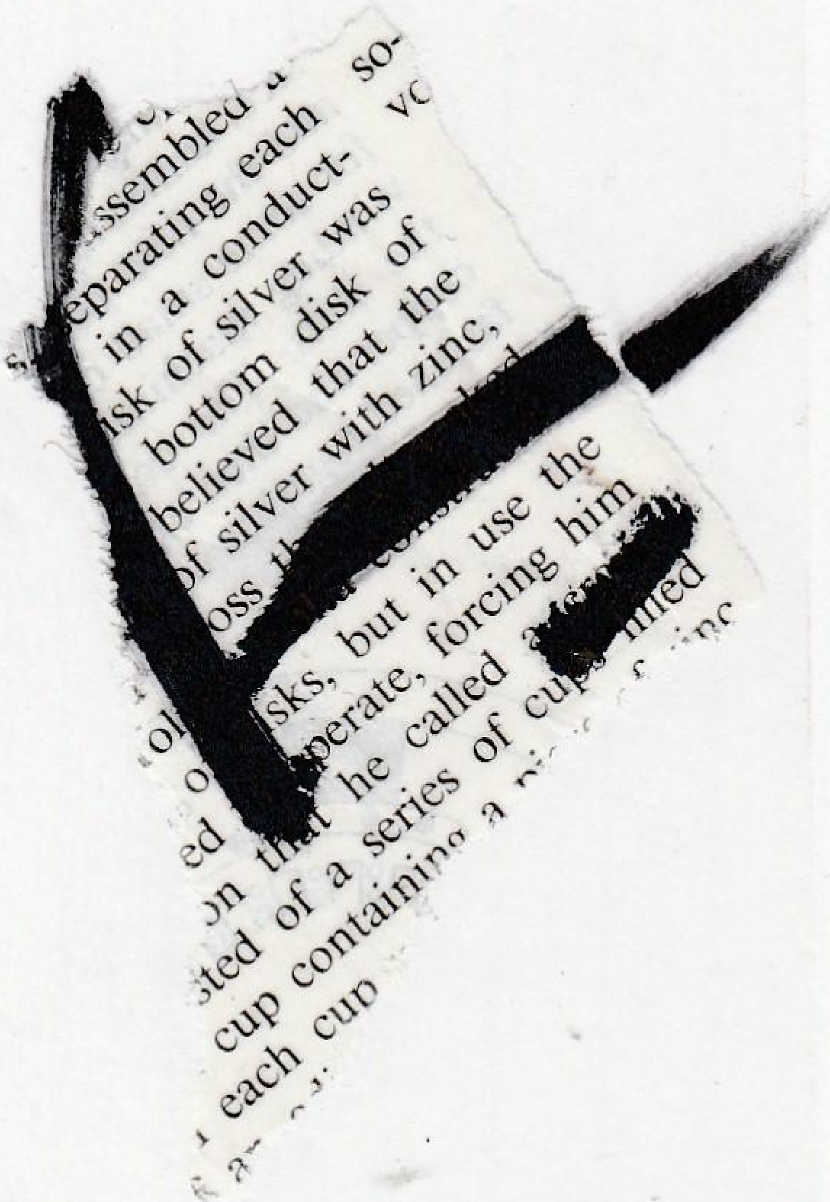
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siphon \'sī-fən\ *n.*
1. PHYSICS. A bent tube, generally shaped like an upside-down U, with one arm longer than the other. It uses air pressure and gravity to move fluid over a barrier to a lower level. 2. ZOOLOGY. In certain mollusks, a tubular-shaped organ that carries water to the gills or that expels liquid from the gill chamber.

A SIPHON *will not work in a vacuum.*

skeletal muscle \'skel-ət-^{ə}l 'məs-əl\ *n.*
ANATOMY. A voluntary muscle, connected to the bones, that moves some part of the body.

A SKELETAL MUSCLE *is usually opposed by another muscle called an antagonistic muscle.*

skeleton \'skel-ət-^{ə}n\ *n.*
1. ANATOMY and ZOOLOGY. The rigid framework of an animal's body, usually jointed to allow movement. In vertebrate animals, it is an internal framework of bone, of cartilage or of bone and cartilage. 2. The supporting framework of a structure.

Many invertebrate animals, such as insects and crustaceans, have an external SKELETON, *or exoskeleton.*

skull \'skəl\ *n.*
ANATOMY and ZOOLOGY. That part of the skeleton that makes up the bony part of the head of vertebrate animals.

In man, the SKULL *is made up of 8 cranial bones and 14 facial bones.*

slant height \'slant 'hīt\ *n.*
MATHEMATICS. The altitude of any lateral face of a regular pyramid or frustum of a regular pyramid; of a right circular cone, the length of any one of its elements.

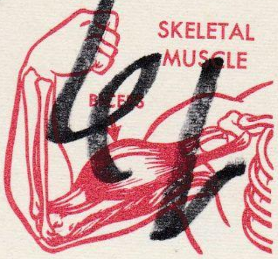
The lateral area of a regular pyramid is equal to one half the product of the perimeter of its base and its SLANT HEIGHT.

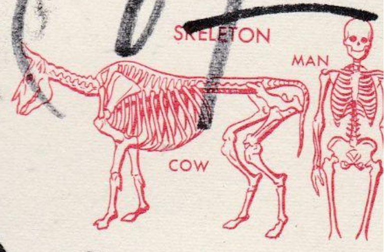
slate \'slāt\ *n.*
EARTH SCIENCE. A metamorphic rock that is formed by metamorphism of shale.

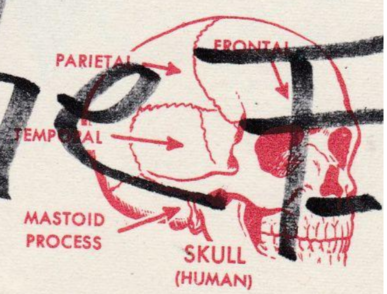
Although SLATE *splits easily into thin layers, it is difficult to split in any other direction.*

sleet \'slēt\ *n.*
EARTH SCIENCE. Rain that has been frozen, or partly frozen, into ice particles; also, a mixture of rain and snow.

SLEET *can create hazardous driving conditions by making roads slippery and by reducing visibility.*







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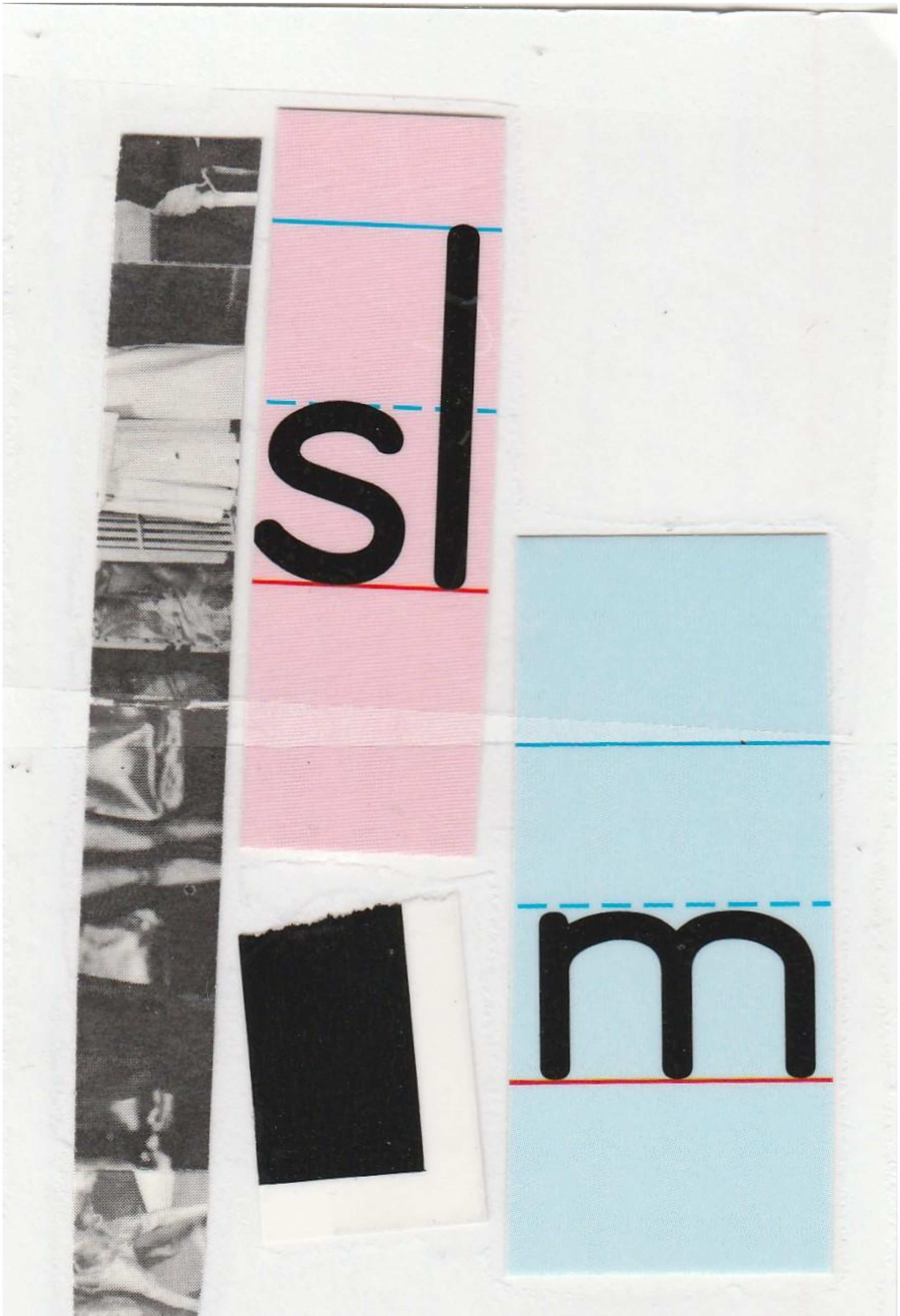
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produced, plutonium-239, is relatively stable and fissionable. It releases approximately the same number of neutrons as does uranium-235; *i.e.,* between two and three on the average for each fission, and its fission cross section for slow neutrons is even higher than that for uranium-235.

With these discoveries it became apparent that the production of plutonium could be a substantial benefit to be gained through the capture of neutrons by uranium-238. For this purpose it would be necessary to design a reactor to favour such captures, but without using up so many neutrons that the chain reaction could not proceed.

Though a natural uranium chain reaction is a possible source of heat and radiation, the necessary quantity of material is too bulky to serve as the basis for an atomic bomb. The process may, however, be used to produce plutonium, which then can be fabricated into a bomb without having to rely on uranium-235. The design and construction of a large plutonium-producing nuclear reactor, therefore, had a high priority during the early days of the Manhattan Project; it was plutonium, in fact that was employed in the first nuclear explosion in a nuclear-weapons test at Alamogordo, New Mexico, on July 16, 1945.

The world's first reactor

The Chicago pile. The world's first nuclear reactor was constructed in the United States at the University of Chicago under the direction of Enrico Fermi. It achieved criticality (a self-sustaining chain reaction) on December 2, 1942. The reactor consisted of 400 tons of graphite, six tons of uranium metal, and 50 tons of uranium oxide, with control rods made of cadmium. Instruments placed inside the pile measured neutron intensity. When the cadmium rods were withdrawn gradually, at a certain point the neutron intensity began to increase rapidly, signalling the start of a self-sustaining nuclear chain reaction. The cadmium rods were reinserted before any appreciable amount of heat developed and before the neutron and radiation levels became hazardous. Later in the day the historic news was transmitted by telephone from Arthur Holly Compton in Chicago to James B. Conant at Harvard University in the following guarded language: "Jim, you will be interested to know that the Italian navigator has just landed in the New World."

The experiment confirmed what had been expected: criticality was reached even more easily than anticipated. Plans were formulated for the construction of four other reactors in the U.S., and the work of harnessing the atom for peaceful purposes was under way.

Reactor types. *Thermal and fast reactors.* The long-run advantages of a reactor that operated with fast neutrons, without a moderator, had been recognized by 1946. With sufficient enrichment, criticality could be achieved despite the lower cross section for fission with fast neutrons. Because fissions produced by fast neutrons supply slightly more neutrons than the average, they provide extra neutrons beyond those required to keep the chain reaction going. Calculatio[illegible] uranium-238 in or near the [illegible] resulted from occasiona[illegible] increase slightly.

More im[illegible] supply of the extra neut[illegible] to produce plutoniu[illegible] consumed. In other wor[illegible] use the next fission, w[illegible] ns or losses caused by cap[illegible] there would still be more th[illegible] remaining to be capture[illegible] would then convert to pluto[illegible] theoretically possible to consume [illegible] tremendously increasing the v[illegible] uranium [illegible] of energy.

The breeder reactor

To test [illegible] ideas, an [illegible] reactor, the EBR-I, w[illegible] National Laboratory. The reactor [illegible] of fuel rods of highly enriched uran[illegible] surrounded by a blanket of natural uranium to provide the fertile material in which the plutonium could be formed.

Operating successfully for the first time during 1951, the reactors demonstrated not only the feasibility of breeding but also the feasibility of generating electricity with nuclear power. Reactor heat was transferred with a liquid mixture of sodium and potassium to a steam generator that provided power for a small electric turbine.

The two reactor concepts, one making use of slow neutrons (generally referred to as thermal neutrons), and the breeder concept, utilizing fast neutrons, were forerunners of two fundamental classes of reactors: thermal reactors and fast reactors. Most of the wide variety of reactor types that have since been developed are of these two classes.

By courtesy of the Atomic Energy Commission

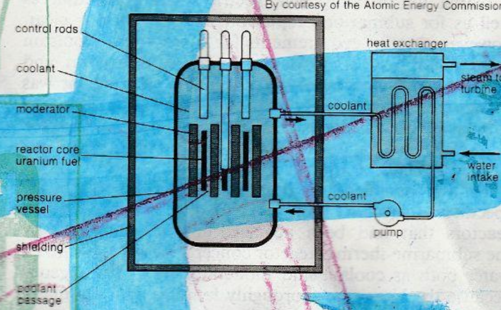

Figure 57: Components of a power reactor designed to generate high-pressure steam.

Plutonium-production reactors. The production of plutonium for military purposes was expanded in the United States after World War II with the construction of additional graphite-moderated reactors and a new series of large heavy-water reactors (HWR). (Heavy water is water in which the conventional hydrogen atoms have been replaced by deuterium, the hydrogen-2 isotope.) The heavy-water reactors were also used to convert lithium into tritium (the hydrogen-3 isotope) for use in thermonuclear weapons.

Materials-testing reactor. One of the early needs in reactor development was a materials-testing reactor that could supply a high flux of neutrons to test their effects on materials and thus provide necessary information for the design of other reactors. Neutron flux is the number of neutrons crossing a unit area each second.

Pressurized water was selected to serve as both moderator and coolant in the first materials-testing reactor. The fuel was highly enriched uranium embedded in aluminum, arranged in the form of parallel plates. Water was pumped through at high speeds to carry heat away, thus allowing the reactor to operate at a high power density with a correspondingly high neutron flux. The reactor was placed in full-scale operation in 1952.

Aircraft-propulsion reactor. The use of nuclear power for aircraft propulsion was proposed immediately after the end of World War II. The U.S. Air Force began a project known as Nuclear Energy for the Propulsion of Aircraft (NEPA); but controversy over the potential hazard began at once, and, as the complexities of the problem became more evident, the project was discontinued in 1951.

Responsibility for the design of an aircraft engine was shifted to the General Electric Company and the National Reactor Testing Station in Idaho where test facilities could be built. But in the end enthusiasm for the project was overcome by doubts about feasibility and safety. The goal of planes that could fly for long periods without refuelling did not seem to justify the development expense nor the hazards that would inevitably be associated with carrying nuclear reactors in airplanes, and the project was abandoned in 1961.

Reactors for a nuclear navy. The use of nuclear reactors for the propulsion of naval vessels has been highly successful. Although it was not directly involved in nuclear matters during World War II, the U.S. Navy was interested in nuclear energy before the establishment of the Manhattan Project as the result of research undertaken at the Naval Research Laboratory.

Nuclear energy for submarines

Studies of the use of nuclear reactors as a source of energy for submarine propulsion began in 1946. The potential advantages over oil as a fuel were obvious. With nuclear fuel, it would no longer be necessary to surface to recharge batteries, and the energy from uranium for a given bulk would be far higher than that from oil, thus making possible almost indefinite operation without refuelling.

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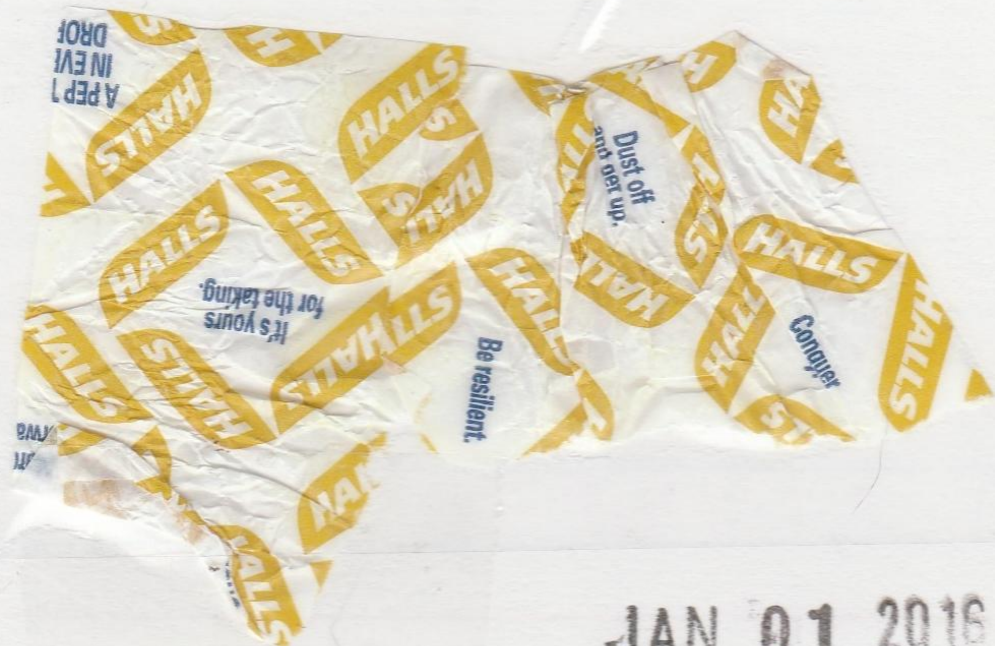
HALLS
It's yours for the taking.
Be resilient.
Dust off and get up.
Conquer

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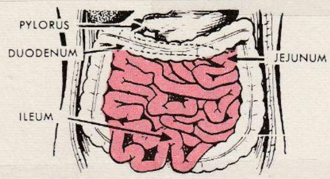
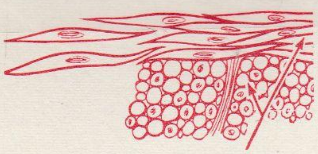
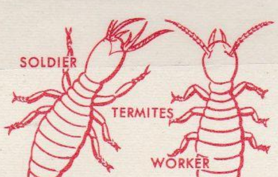


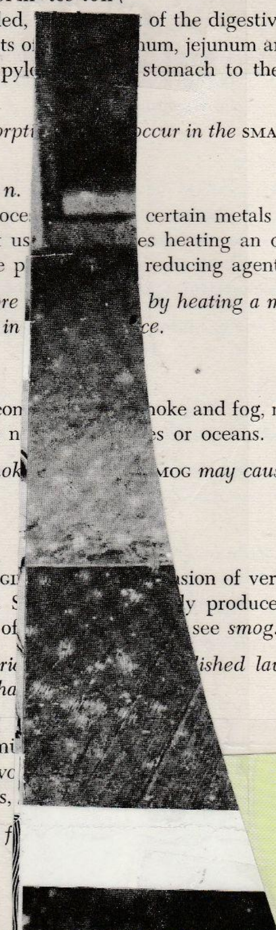
SMALL INTESTINE



SMOOTH MUSCLES



SOCIAL ANIMAL



small intestine \'smȯl in-'tes-tən\
ANATOMY. The coiled, of the digestive tract in the abdomen. It consists o hum, jejunum and ilium, and extends from the pyl stomach to the large intestine.

Digestion and absorpti occur in the SMALL INTESTINE.

smelting \'smelt-iŋ\ *n.*
ENGINEERING. A proce certain metals are obtained from their ores. It us es heating an ore to a high temperature in the p reducing agent.

SMELTING *of iron ore by heating a mixture of ore and coke (carbon) in ce.*

smog \'smȯg\ *n.*
EARTH SCIENCE. A con noke and fog, most common in industrial areas n s or oceans.

The fumes and smok MOG *may cause respiratory irritation.*

smoke \'smōk\ *n.*
CHEMISTRY and ENGI sion of very small, solid particles in a gas. y produced by the incomplete burning of see *smog.*

Most large industri lished laws to control and limit the discha

smooth muscles \'smü
ANATOMY. The invo ooth or unstriated fibers,

SMOOTH MUSCLES *f tary, control.*

snow \'snō\ *n.*
EARTH SCIENCE. A fo f precipi rops are frozen into ice crystals having apes. Snow may fall as separate crysta d together.

A blanket of SNOW *may protect ve iods of below-freezing temperatures.*

social animal \'sō-shəl 'an-ə-məl\
ZOOLOGY. An animal that charact h a group of animals of the same spec life

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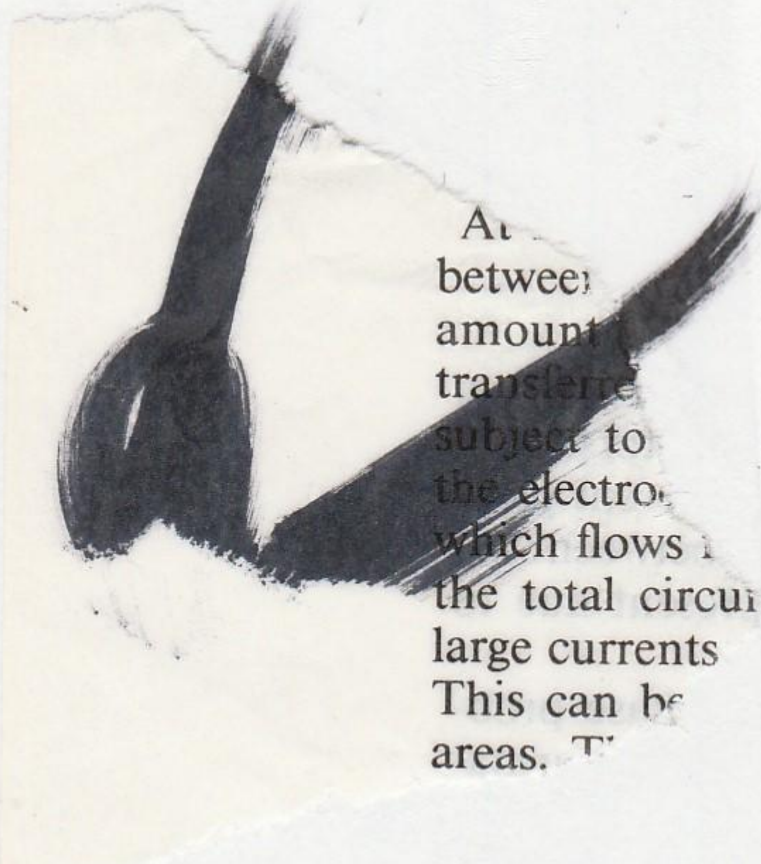
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amount
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reduction \ri-'dək-shən\ *n.*
1. MATHE... proces... expression or quanti... ...ch proce- dure... ...lifying fra... an- oth... th... b... r... r... ...educ... o... ...s from o...

T... ...ction to a decimal ... ...ding t... ...e denominator.

red... ...'dək-shən də-vi...
B... ...f the two cell divisions ... ...is, in which th... ...mber in a cell is reduced by ... Reduction d... ...ametog... ...nd leads to the ... ...ive cells of p... *diploid number...*

A sperm and ... unite in fertilization to restor... ...osomes ... fer- tili... cell.

reef ...\ *n.*
...SCIENCE. A ... r range of ... k or coral at ... e of the sea ... enerally s... ged but may ... tide.

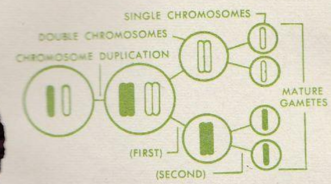
...oll, found ... y in the S... acific Ocean, is ... r ring-sha... ain of cora...s.

...ng telesco... ...'flekt-iŋ 'te... ...ōp\
ASTRONOMY. A ... telescope ... es a spherical or p... bolic mirror ra... an object... for focusing light ra... also called a ... see *refl... telescope* and *Cass... grainian refle...*

The largest R... TELESCO... *orld, at the Palomar Observatory i... ...ia, has ... inches in diameter.*

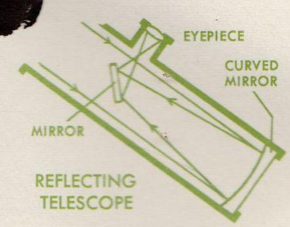
reflection \ri-'flek-shən\ *n.*
PHYSICS. The change of direction of a moving object, a stream of particles or energy when it strikes a substance that it does not enter; also, the image formed by a mirror.

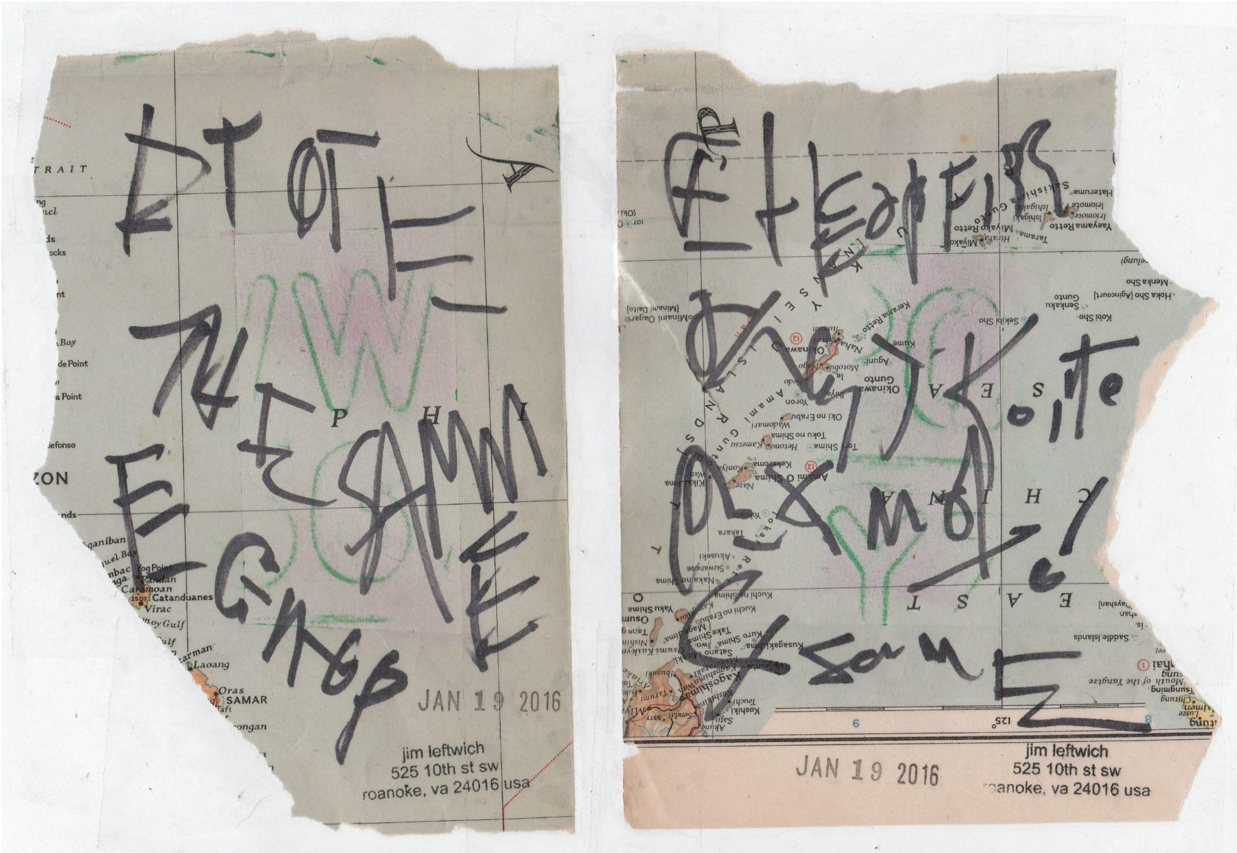
A flat stone, when thrown properly onto a still lake or pond, will undergo repeated REFLECTION.



...CTION DIVISION

REEF (ATOLL)

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SW
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α	alpha particle
β; β^-	beta particle
β^+	positron
γ	gamma radiation
Δ	a small change; heat
λ	wavelength; radioactive-decay constant
ma	milliampere
μc	microcurie
μf	microfarad
μin.	microinch
μm	micron
$\mu\mu$	micromicron
$\mu\mu$f	micromicrofarad
ν	frequency; neutrino
π	3.14159; osmotic pressure

Σ	the sum of
σ	nuclear cross section (barns); a
Ω	electrical resistance (ohms)
ω	angular speed; angular velocity
$'$	minute (angular measure)
$''$	second (angular measure)
♂	male
♀	female
$>$	is greater than
$<$	is less than
$\propto$	is proportional to
∞	infinity
$\sqrt{}$	square root of
$^\circ$	degrees; temperature; angle measurement (example, 30°)

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m^2	square meter
m^3	cubic meter
ma	milliampere
Mev	one million electron volts
mg	milligram
mh	millihenry
mi	mile
mi^2	square mile
min	minute
m-kg	meter-kilogram
ml	milliliter
mm	millimeter
mm^2	square millimeter
mm^3	cubic millimeter
$m\mu$	millimicron
mph	miles per hour
mphps	miles per hour per second
mv	millivolt
N	Avogadro's constant
$n!$	factorial n
OD	outside diameter
oz	ounce
pH	rating on acid-alkaline scale


Carling
72 Point
48 Point
36 Point
24 Point
18 Point
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e most out of every cup, bring water to
steep 5 to 10 minutes. For a stronger tea,
use 2 tea bags.
INGREDIENTS
Root, Organic Cardamom Seed,
Organic Coriander Seed, Organic
Peppermint Leaf, Organic Ginger
c Black Pepper.
NING
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nant or nursing.
72 Point
A GHIJ
K PQRST
U YZ1234
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DIRECTIONS
CAFFEINE FREE
Green Tea
iple Echinacea
SUPPORTS
IMMUNE FUNCTION
~100% NATURAL~
WITH ORGANIC GREEN TEA
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rent in the cooler can be reversed so that the bottle is warmed to the ideal drinking temperature by the time the alarm wakes the baby's mother. In a thermoelectric "hostess cart" or "buffet bar," heating and cooling are used simultaneously in two adjacent compartments of a rolling cart, to keep food hot or cold, ready to serve.

The same air conditioner that cools a house in the summer can be used to heat it during the winter. A large thermoelectric heat pump can move heat either into the house or out of it, depending on the direction of current flow through the device. In either direction, the efficiency can be greater than 100 percent if the temperature difference to be achieved is not too large. In mild climates, this type of home heating could, therefore, be more economical to operate than normal electrical heating. Again, as in most large-scale applications, the initial cost of the device is relatively high.

Assessment. Thermoelectric devices in ever-increasing numbers will continue to be used in various small-scale specialized applications for which they are ideally suited. Many large-scale applications have been suggested, from home heating and air conditioning to central power plants and automotive generators to replace internal combustion engines. These schemes will become practical only if further research in solid-state physics leads to new, inexpensive materials with much larger values for the thermoelectric figure of merit than those presently available.

(Ja.H.W./Ra.W.)

Thermionic devices

Thermionic devices convert heat directly into electricity by means of thermionic emission—the ejection of electrons from a heated surface—rather than by changing it first to some other form of energy. Heat for the device is supplied by chemical, solar, or nuclear sources. It differs somewhat from the vacuum diode, primarily in the source of heat for the cathode.

Thermionic emission is the liberation of electrons from a hot cathode, or emitter. The emitted electrons travel through a vacuum or gas-filled space to a cool anode, or collector. Useful electrical power can be extracted by a load—a resistor or other impedance device—connected between the cathode and anode. The phenomenon was first observed in the middle of the 18th century by Charles DuFay, a French experimenter, who noted that gas near a heated solid conducts electricity. In 1853 Edmund Becquerel, a French physicist, reported that a measurable electric current could be produced by a potential of a few volts in air if the air was heated between hot platinum electrodes. Toward the end of the 19th century in Germany, Julius Elster and Hans Geitel, experimenting on a sealed device that contained two electrodes, noted that charges flowed from the heated electrode to the cooled electrode.

Thermionic emission was identified by Thomas A. Edison in 1883 when he observed that a current passed from a heated filament of an incandescent electric lamp to a conductor in the same glass bulb. Later, W.H. Preece and J.A. Fleming, two English scientists, showed that this effect was produced by electrons flowing through the vacuum from the heated cathode to the anode. J.J. Thomson, an English physicist, in 1897 recognized that electrons exist in solids and described thermionic emission as the "boiling off" of free electrons from solids into a vacuum cavity (see also ELECTRONICS: *Electron tubes*).

Thermionic work function

Another English physicist, O.W. Richardson, in 1916 identified the thermionic work function (a measure of the energy required for an electron to free itself from the surface of the metal) and determined emission current density with the aid of kinetic theory. His theory was subsequently corrected by S. Dushman, a U.S. scientist (1930), following the discovery by Enrico Fermi of electron properties in metals (1927). The basic expression for emission current is thus called the Richardson-Dushman equation.

The development of thermionic converters was delayed until the 1950s when the impetus of space exploration promoted renewed interest. A vacuum thermionic converter and the cesium-filled thermionic converter were developed shortly after 1955.

EFFICIENCIES

A thermionic converter is a device with a heated electron emitter (cathode) electrically insulated from a cooled collector (anode), with the gap between them either a vacuum or filled with a metallic vapour. The elements are placed in a gas-tight envelope, with provisions for connecting a heat source to the cathode, a coolant to the anode, and electrical leads to a load.

Typically, the emitter operates at a temperature near 2,000 K (3,140° F), and the collector at 1,000 K (1,340° F).

The operation of a thermionic converter is influenced by a number of physical characteristics:

Fermi energy. The Fermi energy, or Fermi level, of a solid is the maximum energy that electrons in a solid may reach, even at absolute zero, because of the crowding of electrons.

Work function. The work function is the energy that must be imparted to an electron near the Fermi level of a solid to get the electron out of the solid into a cavity. The work function of tungsten, a typical material for emitters, is 4.52 electron volts (eV), but a collector work function of 0.6 eV has been obtained.

Ionization potential. The ionization potential is the energy that must be imparted to an atom to remove an atomic electron and move it an infinite distance away, making it a free electron. The atom is then said to be ionized.

Thermionic current density. The thermionic current density J_e of a solid is given by the Richardson-Dushman equation in the form:

$$J_e = AT^2 \exp(-1.6 \times 10^{-19} \psi / kT) \text{ amperes/cm}^2$$

based on the projected area of the electrode, in which $A = 120.4$ amperes per square centimetre K^2 for an ideal metal, for T in kelvins; Ψ is the work function in electron volts; k is the Boltzmann constant, with the numerical value 1.38×10^{-23} joule/K. (If the temperature T is measured in kelvins, the quantity kT has the dimensions of an energy and is usually called the thermal energy.) At 300 K (room temperature), $kT/1.6 \times 10^{-19} = 0.0259$ electron volt. Among real materials, A varies: 60.2 for tungsten, molybdenum, and tantalum; 330 for zirconium; 17,000 for platinum; 1.4 for alumina; 1.1×10^{-5} for magnesia.

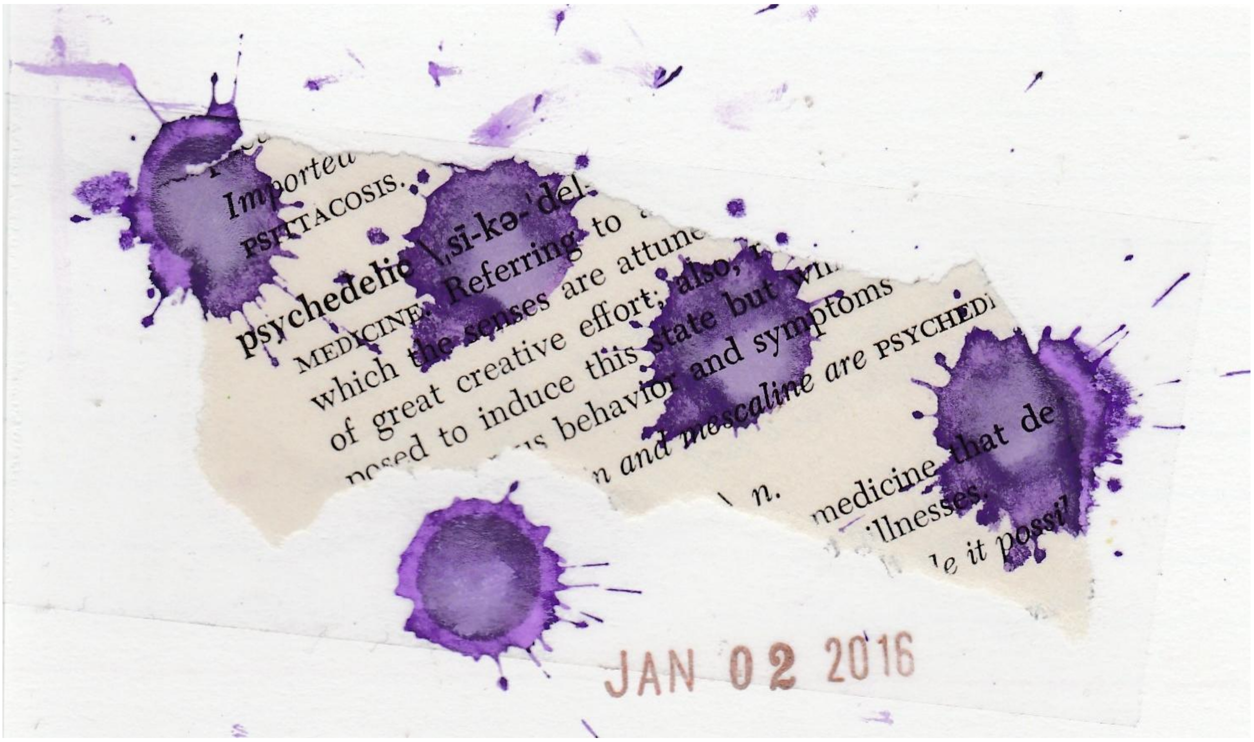
THE VACUUM CONVERTER

In a thermionic converter with a vacuum gap between the electrodes, the electron gas is boiled out of the heated cathode at a high temperature and passed through the vacuum to a colder anode. The electron gas is then condensed at the anode, which is cooled to maintain a lower temperature than the cathode. The electron gas then passes through the external circuit and back to the cathode side to deliver electric power.

Electrons pass through a retarding electrostatic field. The base line corresponds to the potential of the electron in the cathode or the emitter. Heat lifts some of these electrons over the work function barrier at the surface of the emitter, Ψ_E. As soon as an electron escapes the surface of the emitter, it enters into the vacuum gap with other emitted electrons, encountering a retarding potential or space charge potential because of repulsion by other electrons in the gap. Only those electrons with initially sufficient energy to pass over the peak of the potential can reach the anode side. The anode also emits at its temperature, but the net electron flow is from the cathode to the anode (or collector), whose work function is Ψ_c. The net output voltage is V, given by the difference in electric potentials produced by these work functions and after deducting the space charge potentials.

Electrostatic field

To limit the space charge effect, the vacuum gap or interelectrode spacing has to be 0.001 inch (0.025 millimetre) or less. With both electrode surfaces of tungsten impregnated with oxides of barium, aluminum, and calcium, a maximum current density of three amperes per square centimetre can be obtained with a cathode temperature of 2,308° F (1,264° C) and an anode temperature of 1,000° F (nearly 538° C). These conditions yield a maximum output of one watt per square centimetre at 0.7 volts, giving an efficiency of 12 to 13 percent. An output of 10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PSITTACOSIS.
psychedelic \sī-kə-ˈdel
MEDICINE Referring to
which the senses are attune
of great creative effort; also,
posed to induce this state but
behavior and symptoms
and mescaline are PSYCHEDE
that de
medicine
illnesses,
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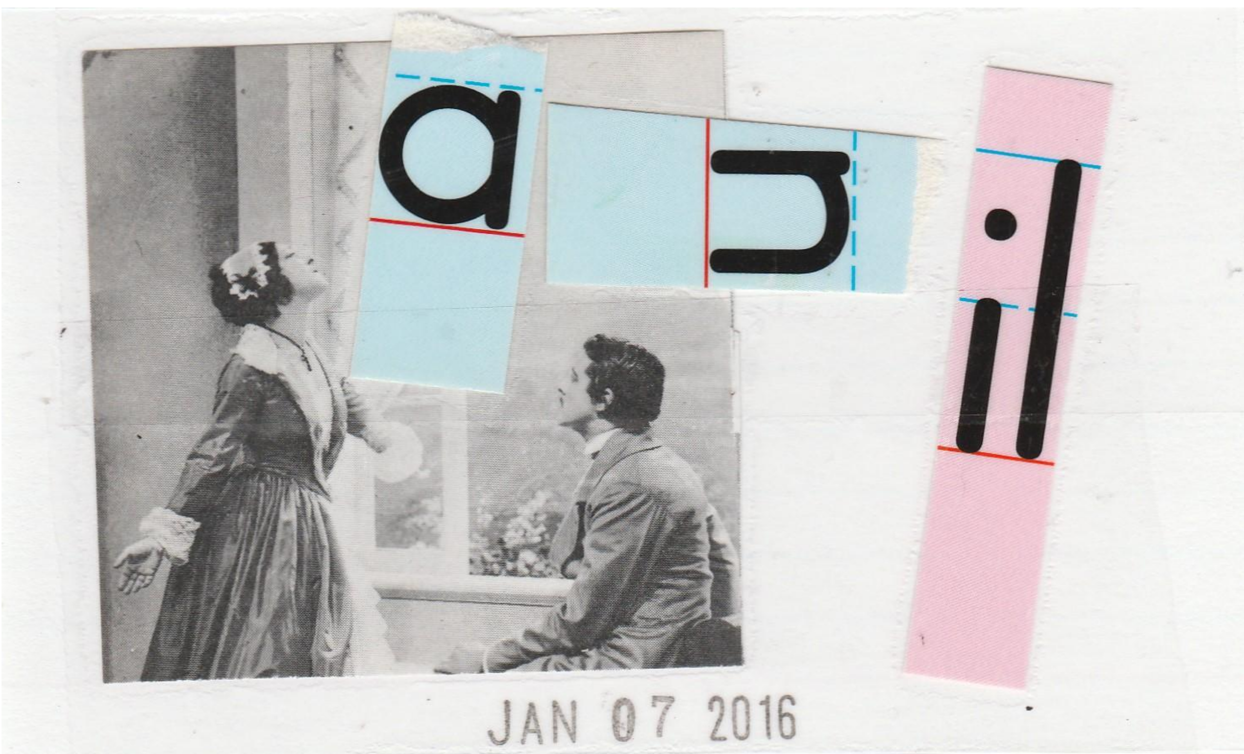
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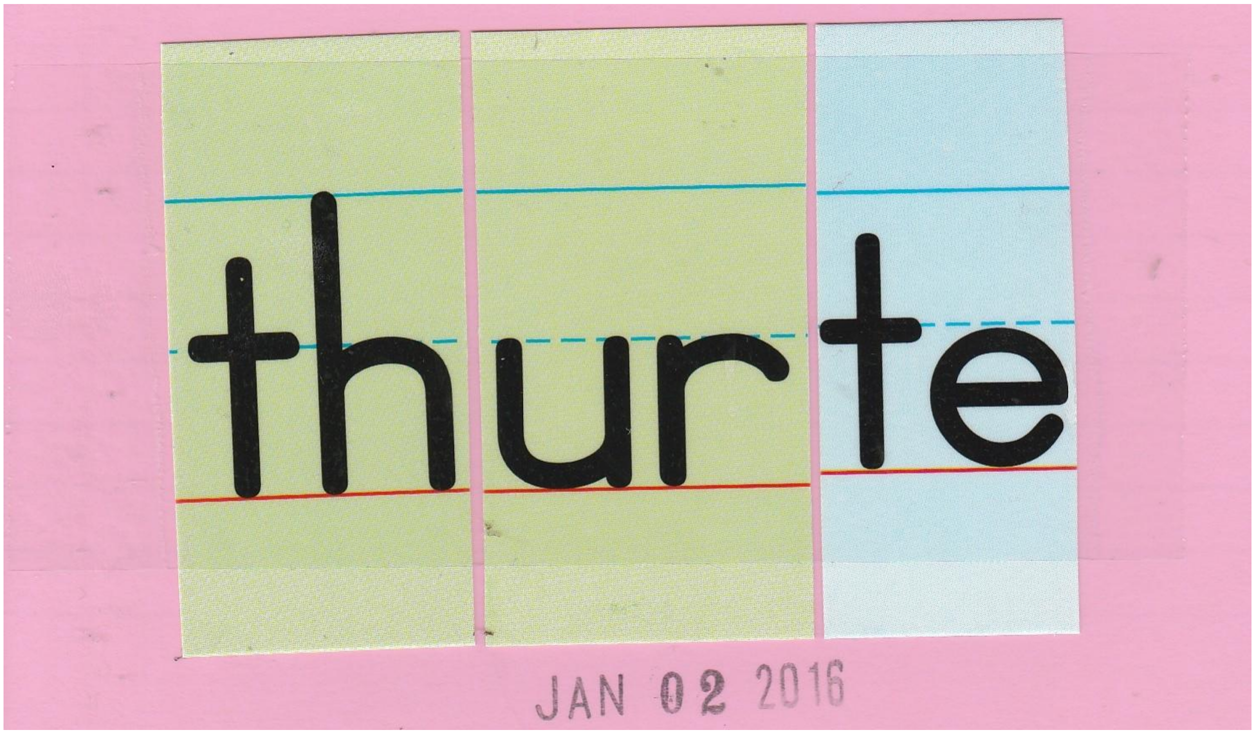
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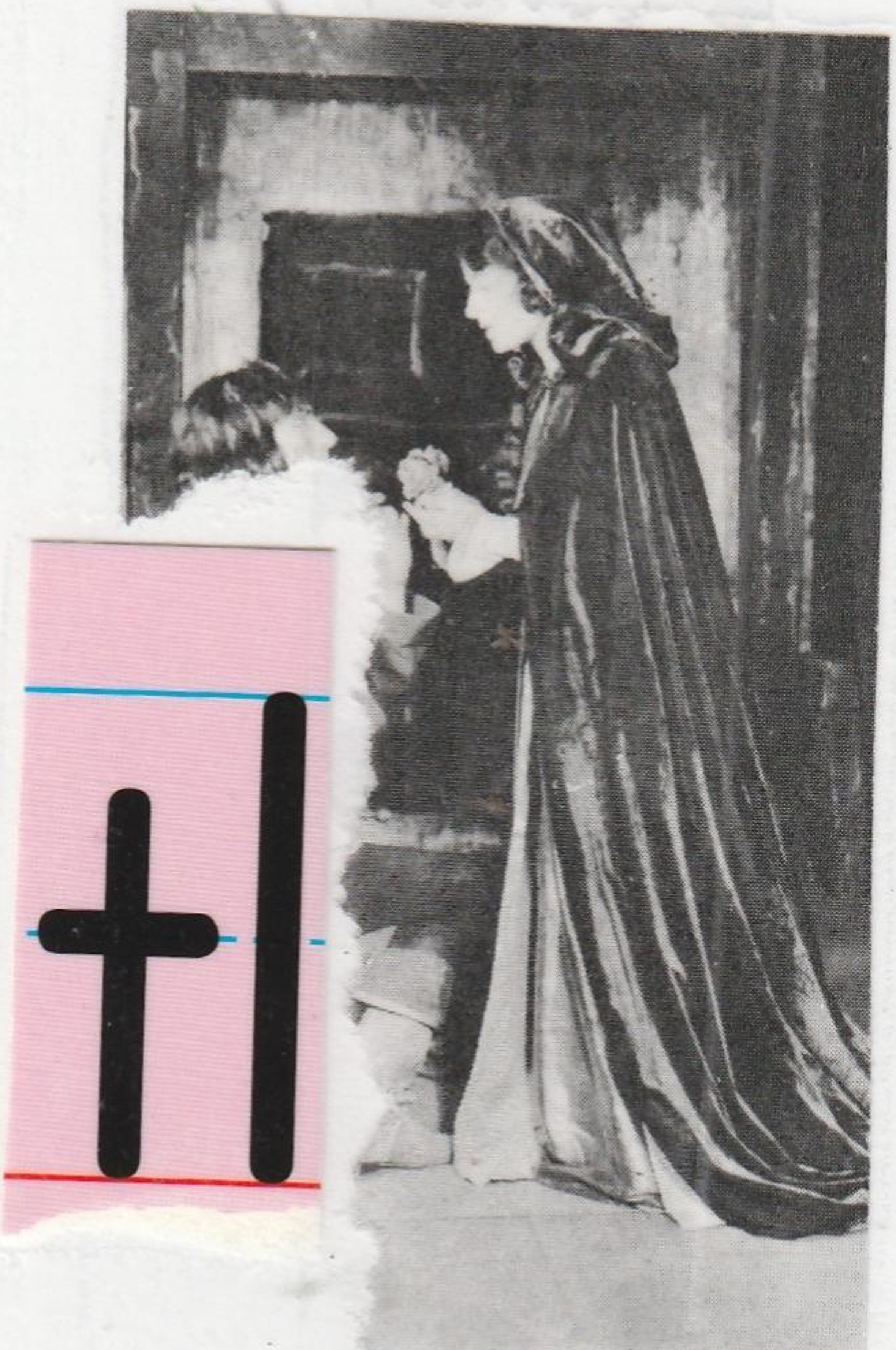
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18 Point
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Leave No Trace
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0.0 0.5 1.0 mi
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4691000m E.
4693000m E.
abcdef
1668.2 - 4738 ft
WA1668 - Piped Cook and Green Pass spring - mi 1668.2 - 4733 ft
RD1668 - Unpaved road 48N20 at Cook and Green Pass, trail junction to spring nearby. - mi 1668.3 - 4736 ft
TR1671 - Copper Butte trail junction - mi 1671 - 6040 ft
TR1673 - Tin Cup trail junction - mi 1673.4 - 6062 ft
CS1673 - Small campsite - mi 1672.7 - 6059 ft
CS1673B - Small campsite - mi 1673 - 6013 ft
WA1674 - Bear Dog Spring - mi 1673.7 - 6101 ft
contour interval 40 feet
1:31,680 1" = 1/2 mile
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WGS84 Zone 10T
TN MN 15°
02/16/15
4641000m N.
4642000m N.
4643000m N.
4644000m N.
36 Point
ABCDEF
TUVWXY
abcdefghij
yz
18 Point
ABCDEFGHIJKLMNOPQR
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Display shows
- TM DN
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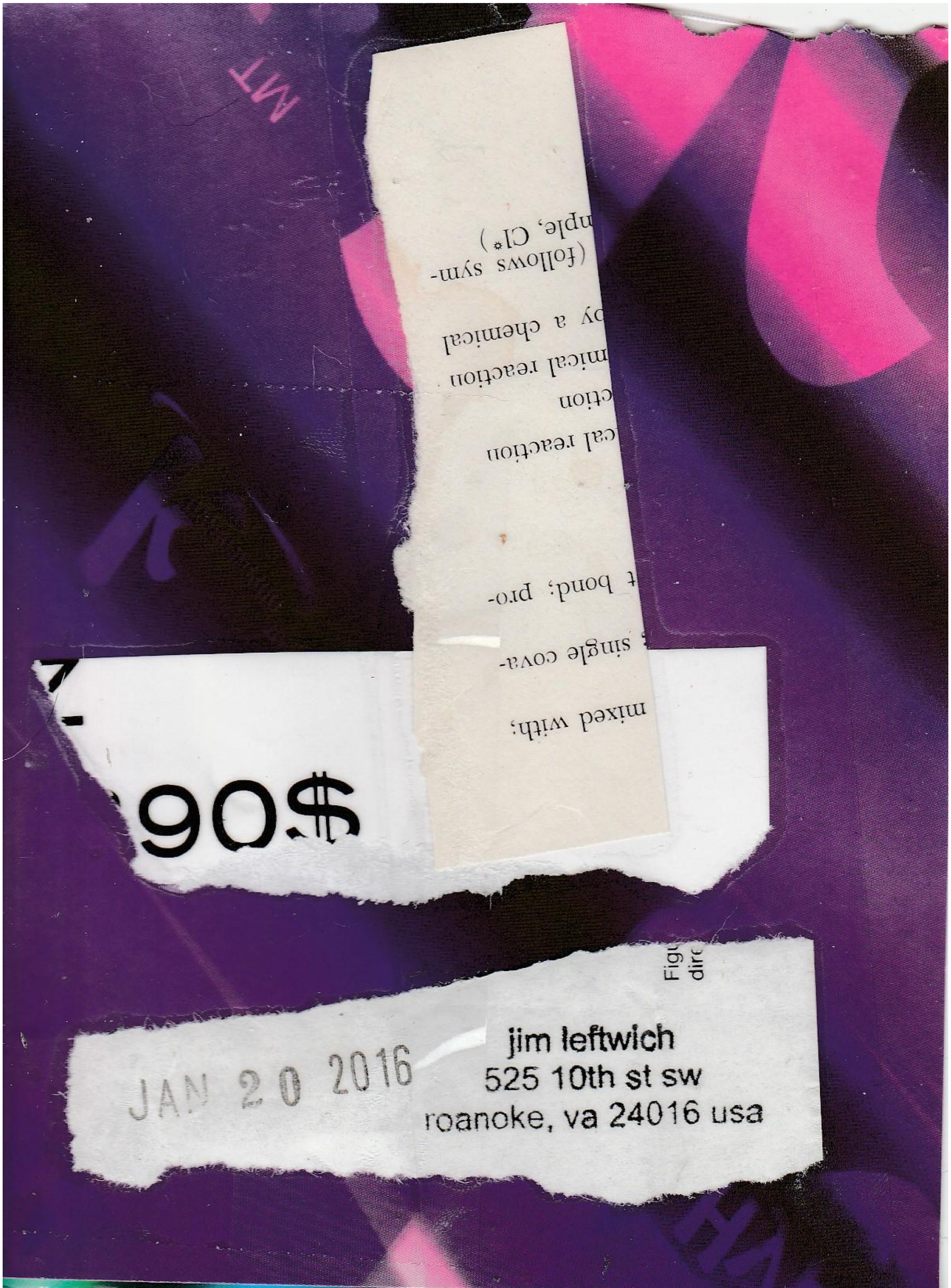
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be
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Apophenia
is the human tendency to perceive meaningful patterns within random data.
1 Origin of the term
2.1 "Patternicity"
2.3 "Randomania"
3.1 Pareidolia
3.3 Gambler's fallacy
4 In literature
6 References
8 External links
unmotivated seeing of connections" accompanied by a "specific experience of an abnormal
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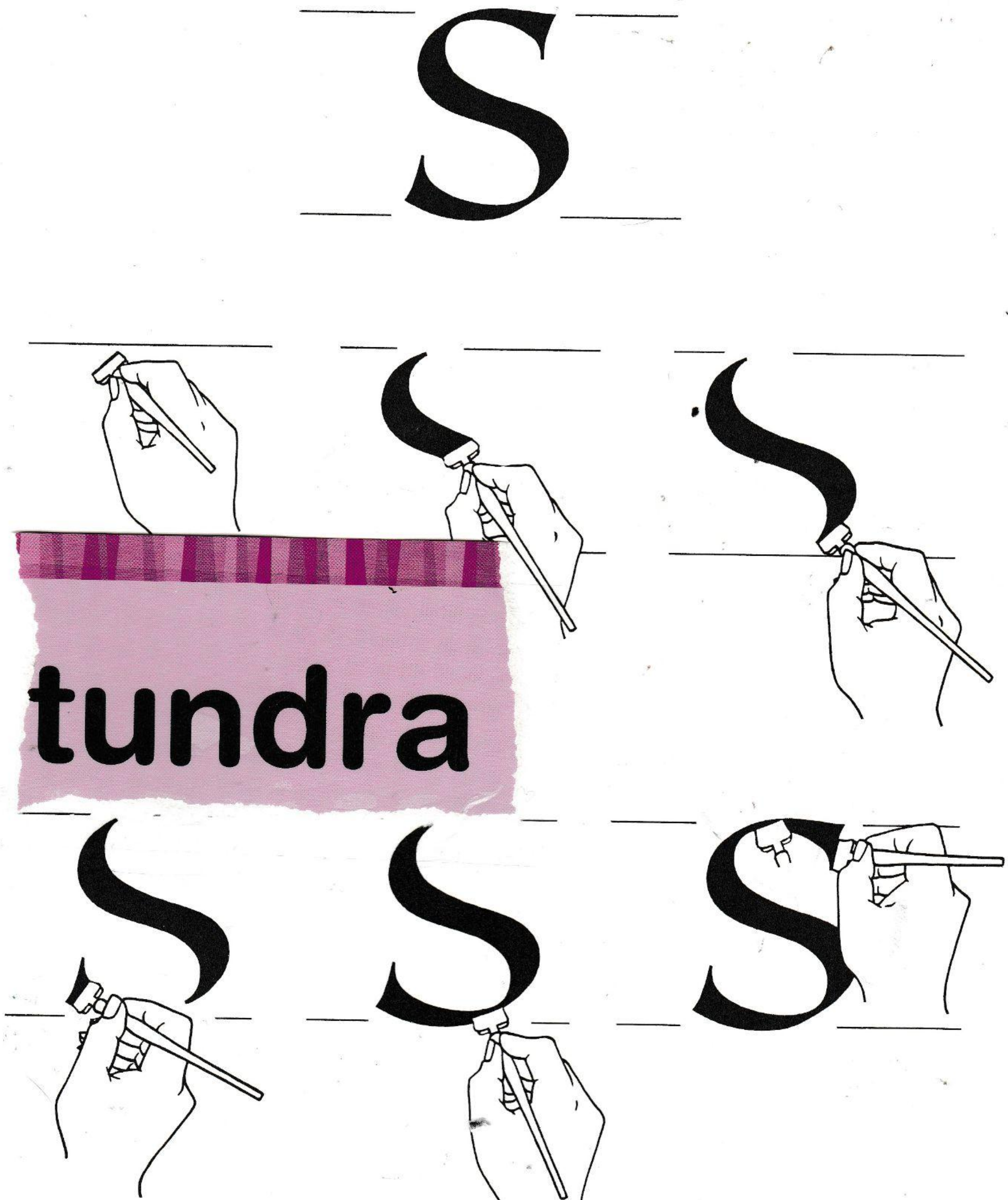

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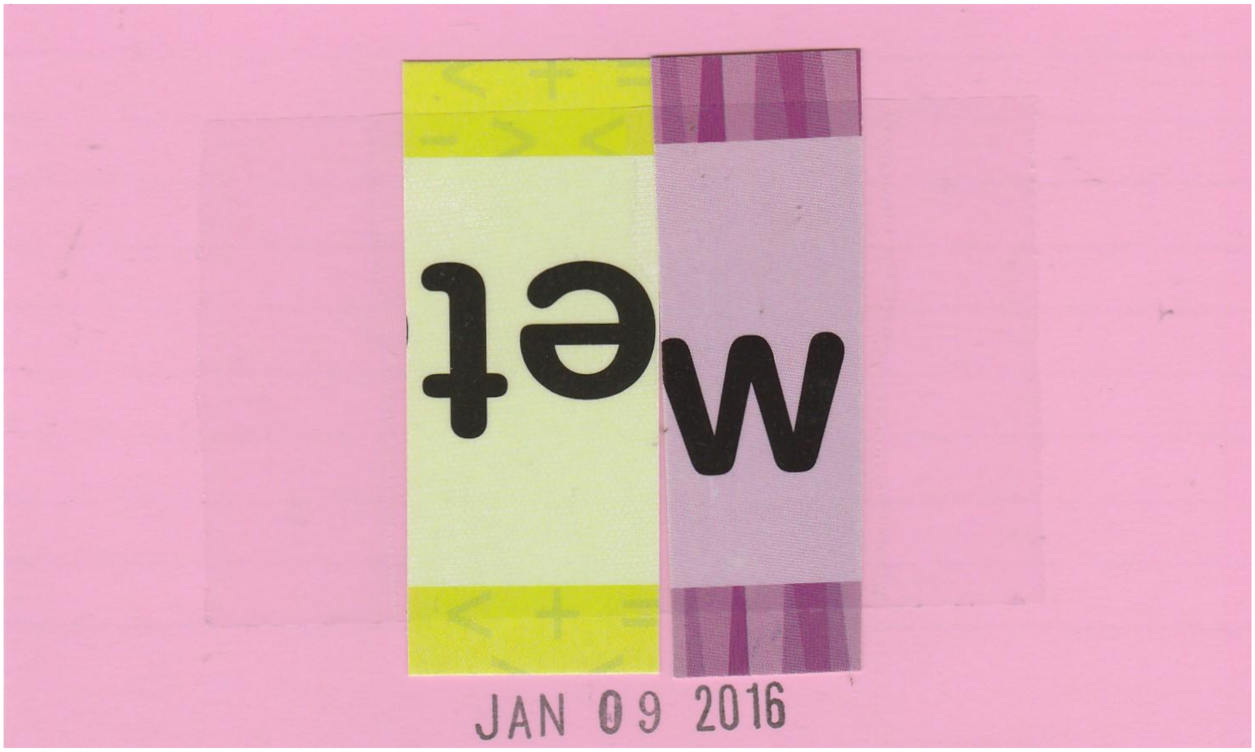
JAN 09 2016


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JAN 09 2016


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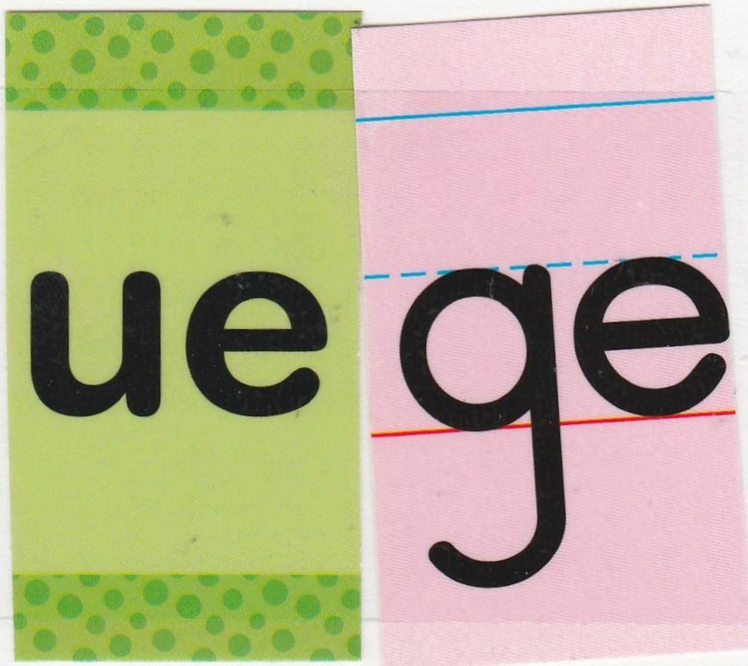
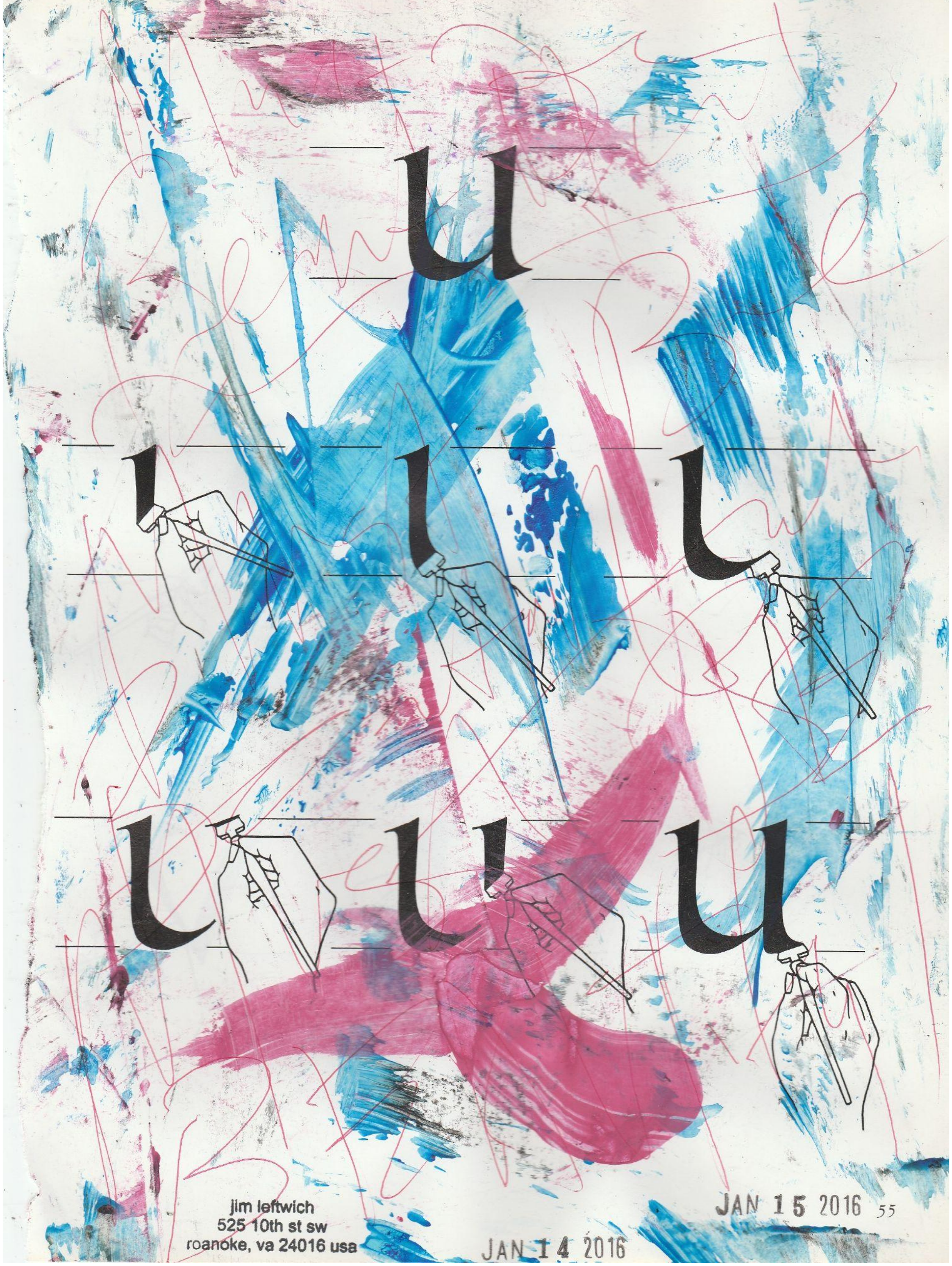
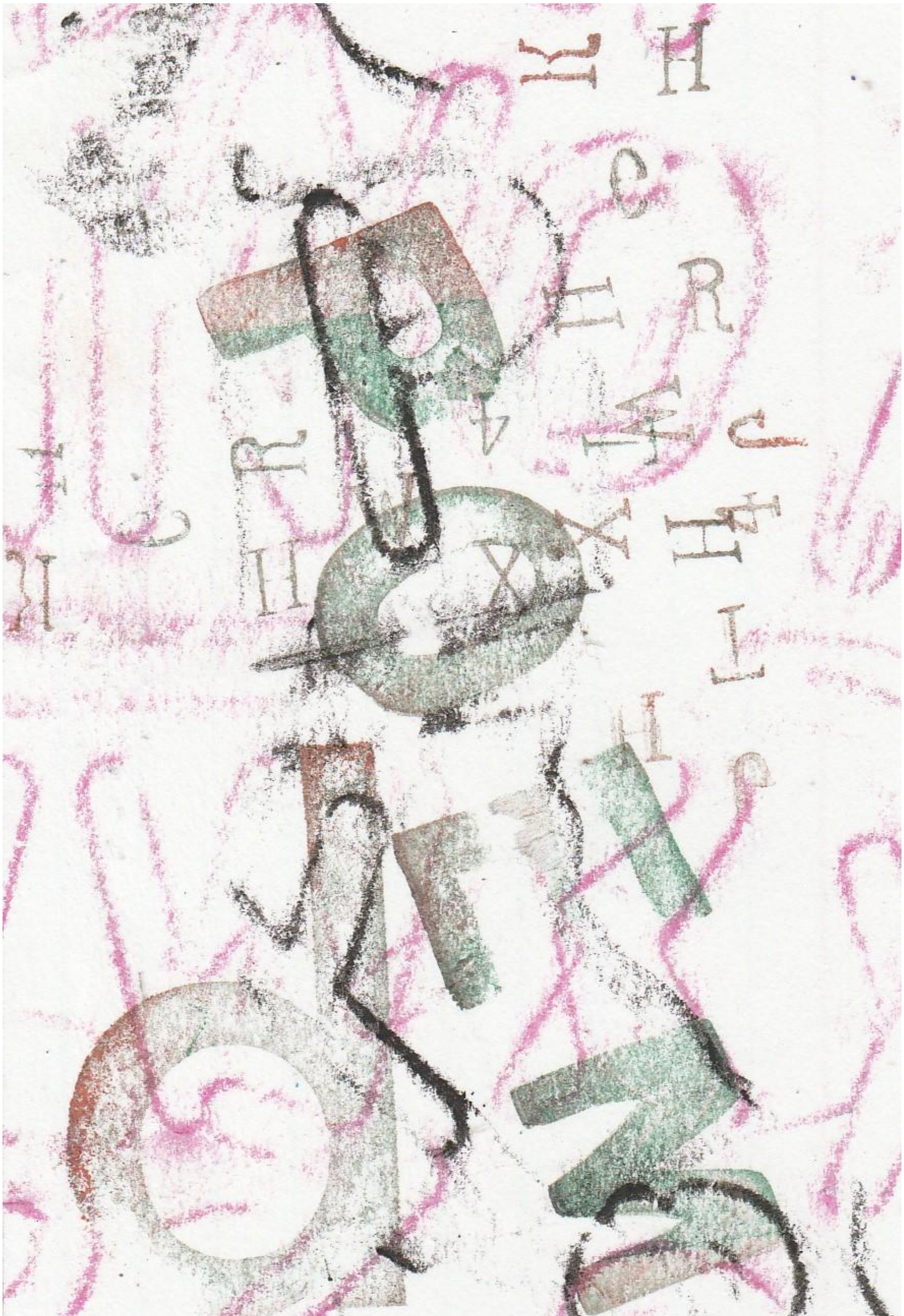


JAN 01 2016

JAN 09 2016


jim leftwich
525 10th st sw
roanoke, va 24016 usa
JAN 15 2016
55
JAN 14 2016

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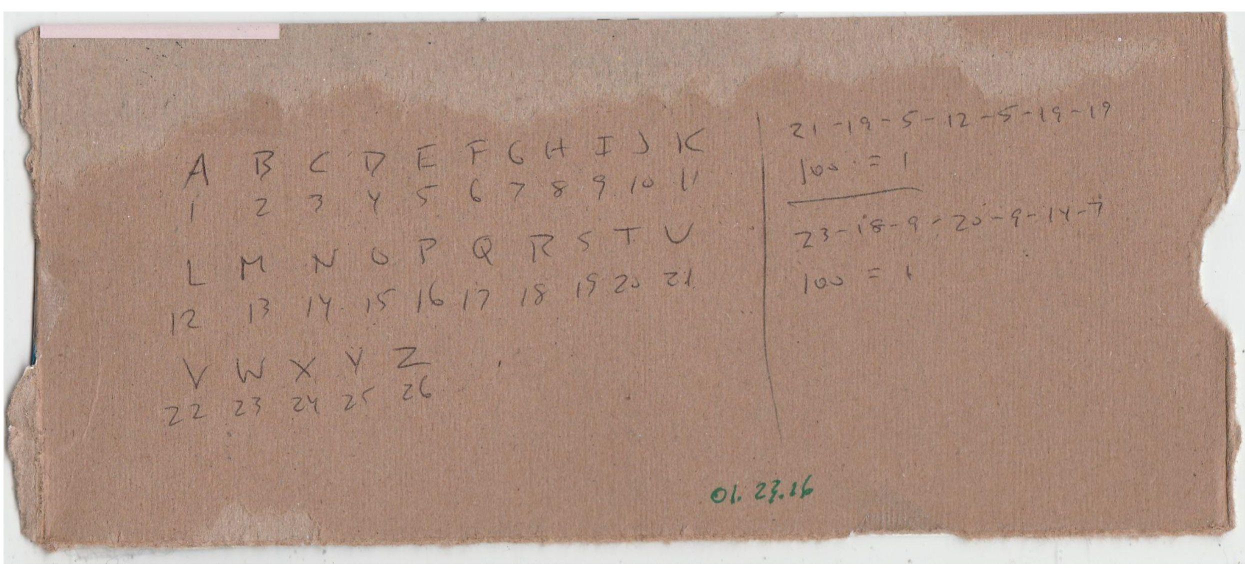
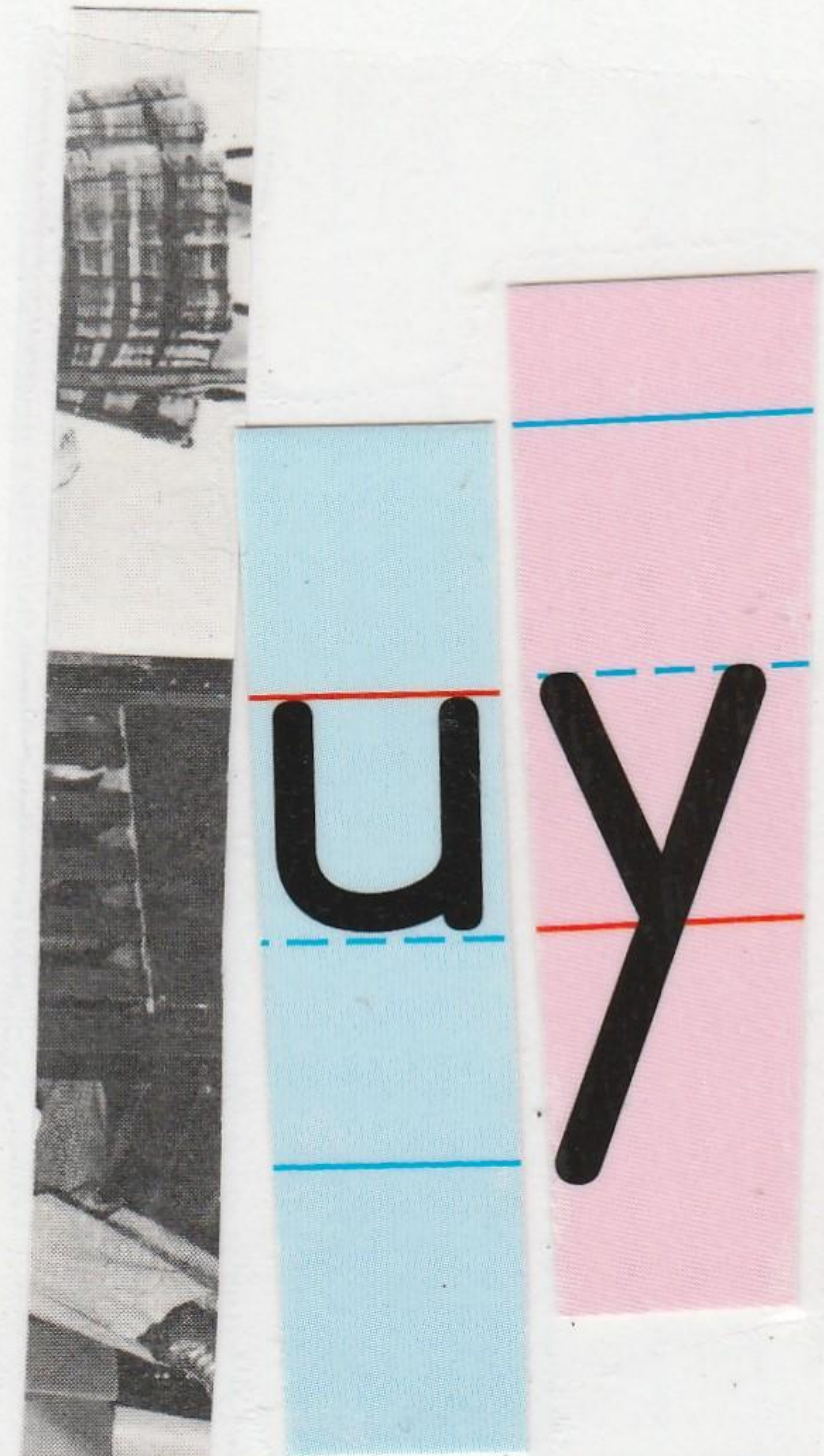

A B C D E F G H I J K
1 2 3 4 5 6 7 8 9 10 11
L M N O P Q R S T U
12 13 14 15 16 17 18 19 20 21
V W X Y Z
22 23 24 25 26
21-19-5-12-5-19-19
100 = 1
23-18-9-20-9-14-7
100 = 1
01. 23.16



JAN 07 2016

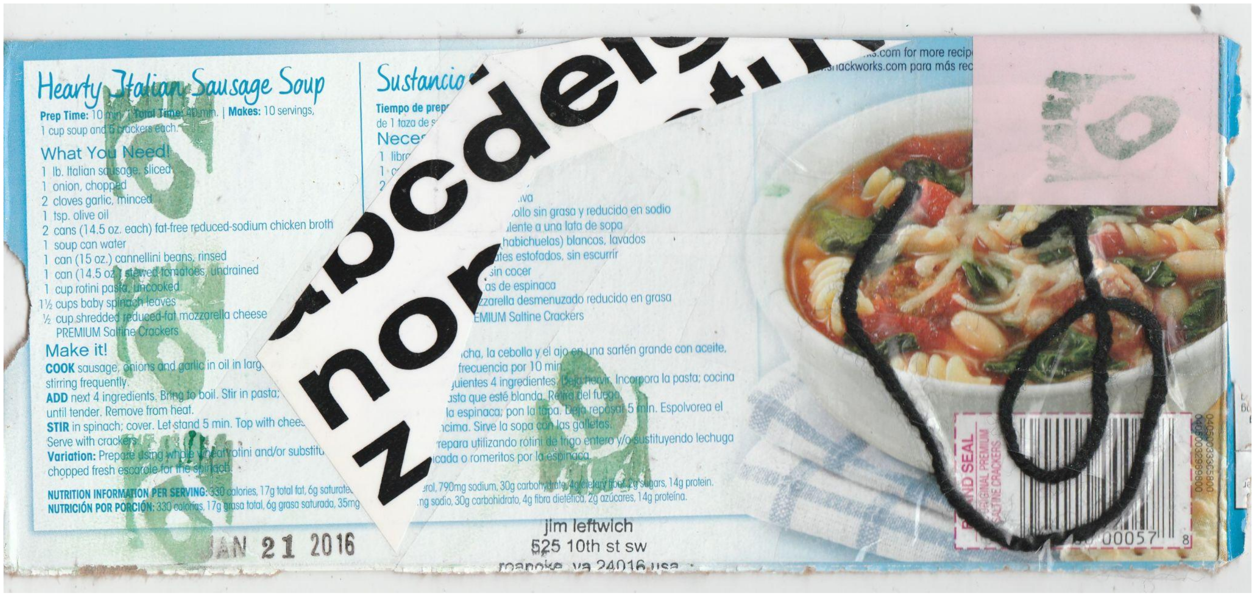
..le accelerato

PHYS[illegible] A device that ..
proxima[illegible] the size of atoms an
any one of [illegible]eral devices, such a
Van de Graaff generator.

The first artificial nucle[illegible]tegr
high-speed protons [illegible] PARTICL

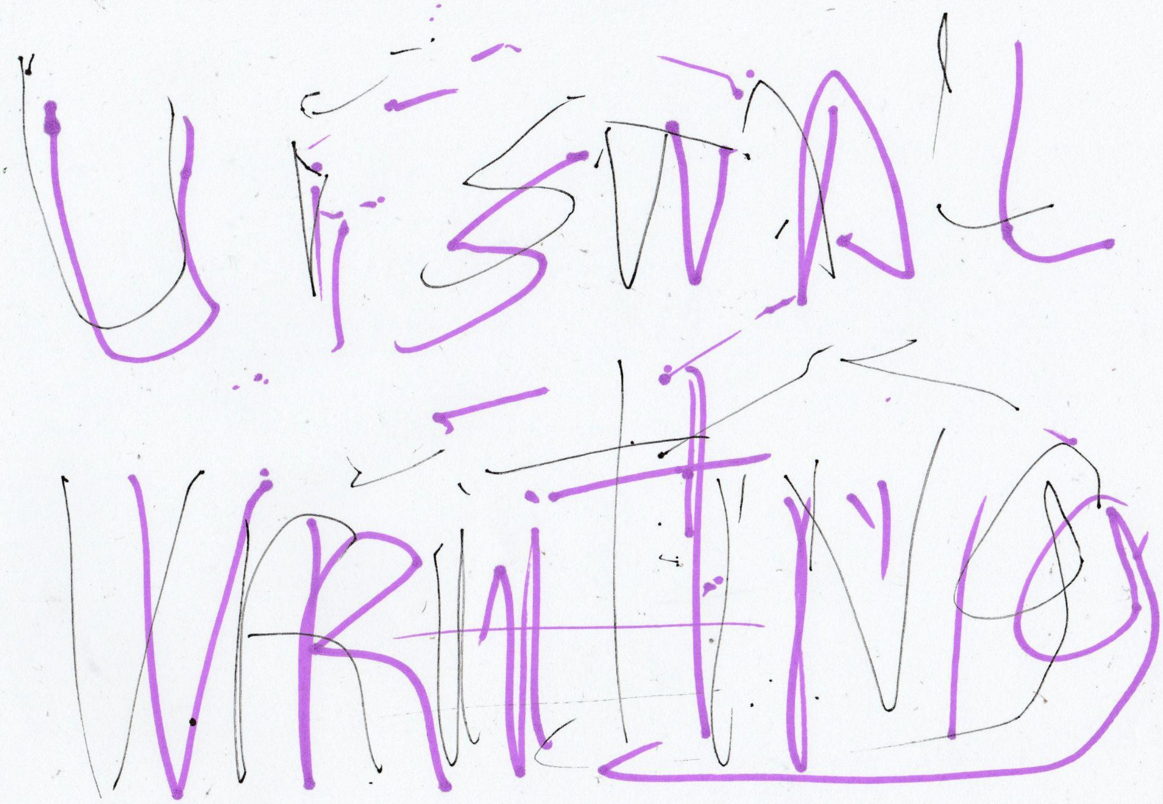
cal's law \pa-'s[illegible]lo\
HYSICS. A principle stating that pres
uid is transmitted undiminished i
uid and to the sides of its contain

he hydraulic lift is an application


Hearty Italian Sausage Soup
What You Need!
Make it!
JAN 21 2016
jim leftwich
525 10th st sw
roanoke, va 24016 usa

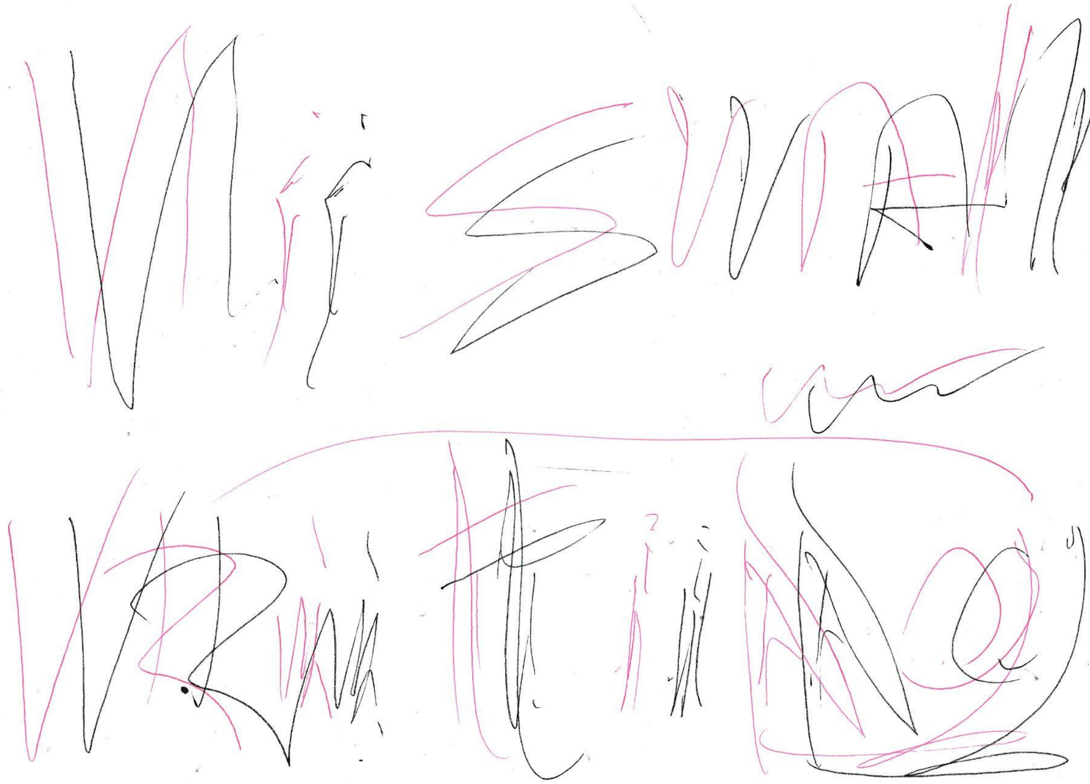

Venus Bold
72 Point
JAN 17 2016
jim leftwich
525 10th st sw
roanoke, va 24016 usa

vint



JAN 16 2016

jim leftwich
525 10th st sw
roanoke, va 24016 usa



JAN 16 2016

jim leftwich
525 10th st sw
roanoke, va 24016 usa

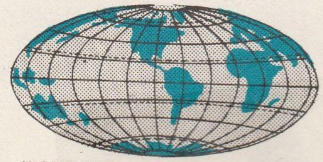

voca
JAN 09 2016

JAN 09 2016


ear
car
rant
JAN 12 2016
jim leftwich
525 10th st sw
roanoke, va 24016 usa

program \\'prō-ˌgram\\
ENGINEERING and MATHEMATICS (N.). The sequence of steps, or operations, performed by a computing machine in solving a problem. (V.). To work out a sequence of arithmetic operations to solve a given type of mathematical problem with a computer.

If the PROGRAM *for a computer is stored in a memory unit, the calculation may be performed many times.*



WORLD MAP

PROJECTION

projection \\prə-'jek-sha…
MATHEMATICS. A … lines of one plane in some specifie… ne; more generally, any map… face upon another surfac… also, the image prod…

…ane of

…the

…mospheric pres-
…quefied under pres-

…ders and sold as a fuel for

○ = Hydrogen Atom
● = Carbon Atom

many Virginia workers a…
…n multiple jobs just to get th…
…poses increasing the

POEM

NATIONAL GEOGRAPHIC

Supr
Lea

…NG THE WAGE
…M

roanoke, …

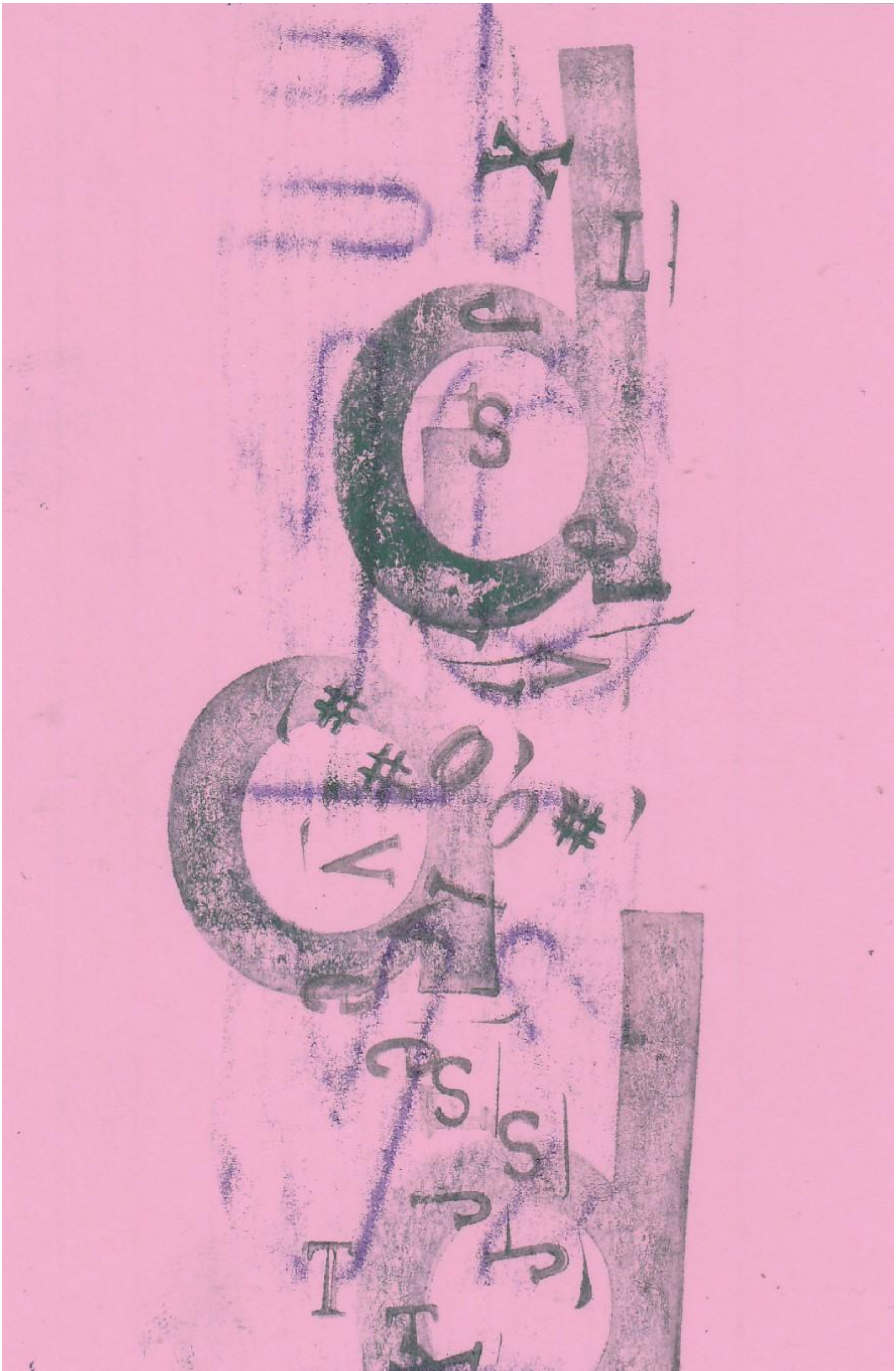
proper fraction …k-shən\\
MATHEMATICS. In …, a fraction whose value is greater than zero and less … one or whose numerator is less than the denominator; in algebra, a fraction whose numerator is of lower degree than the denominator for the variable or variables appearing in them.

The expression $\frac{7}{16}$ *is a* PROPER FRACTION.

JAN 01 2016

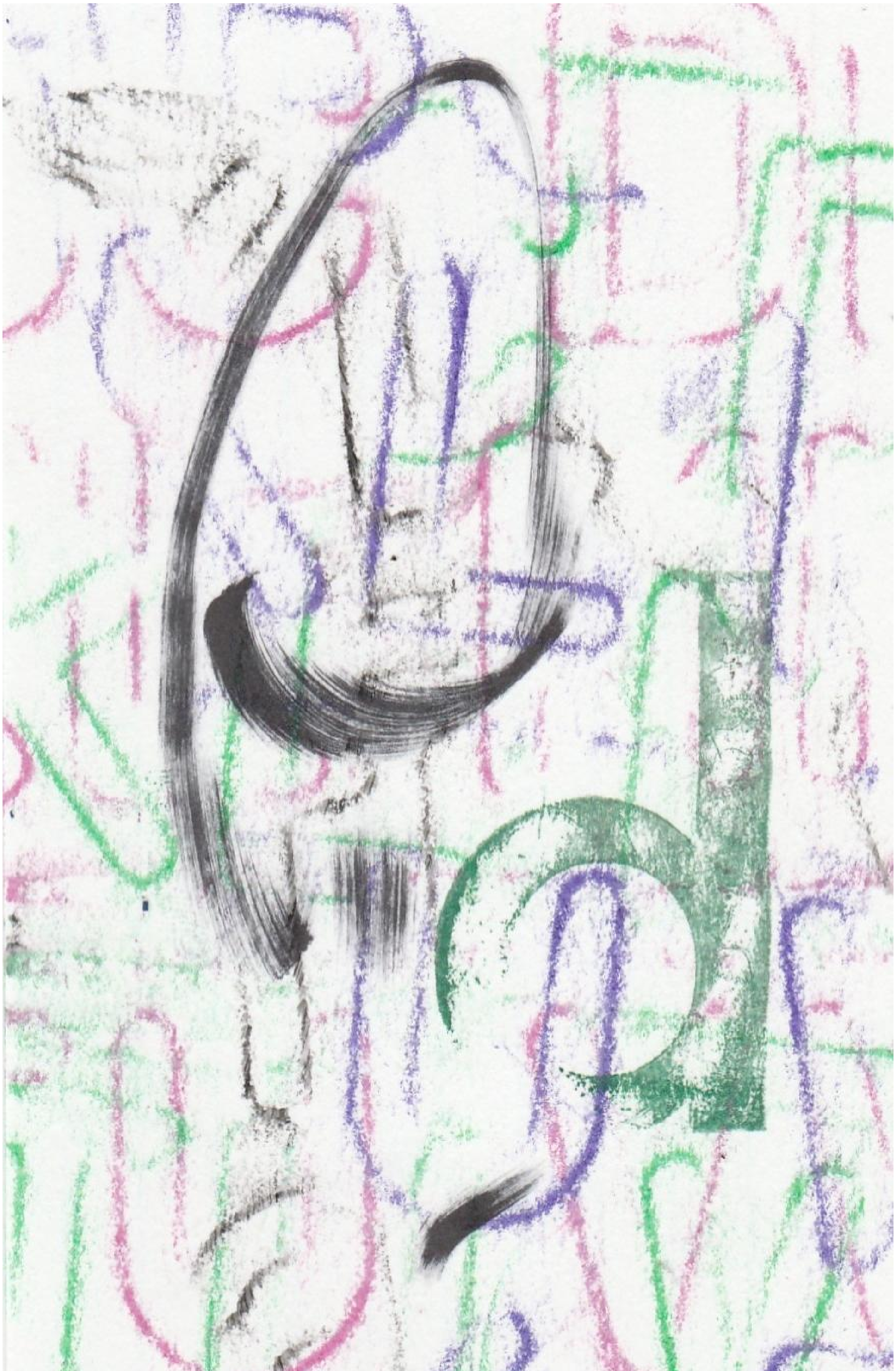
JAN 01 2016

JAN 01 2016

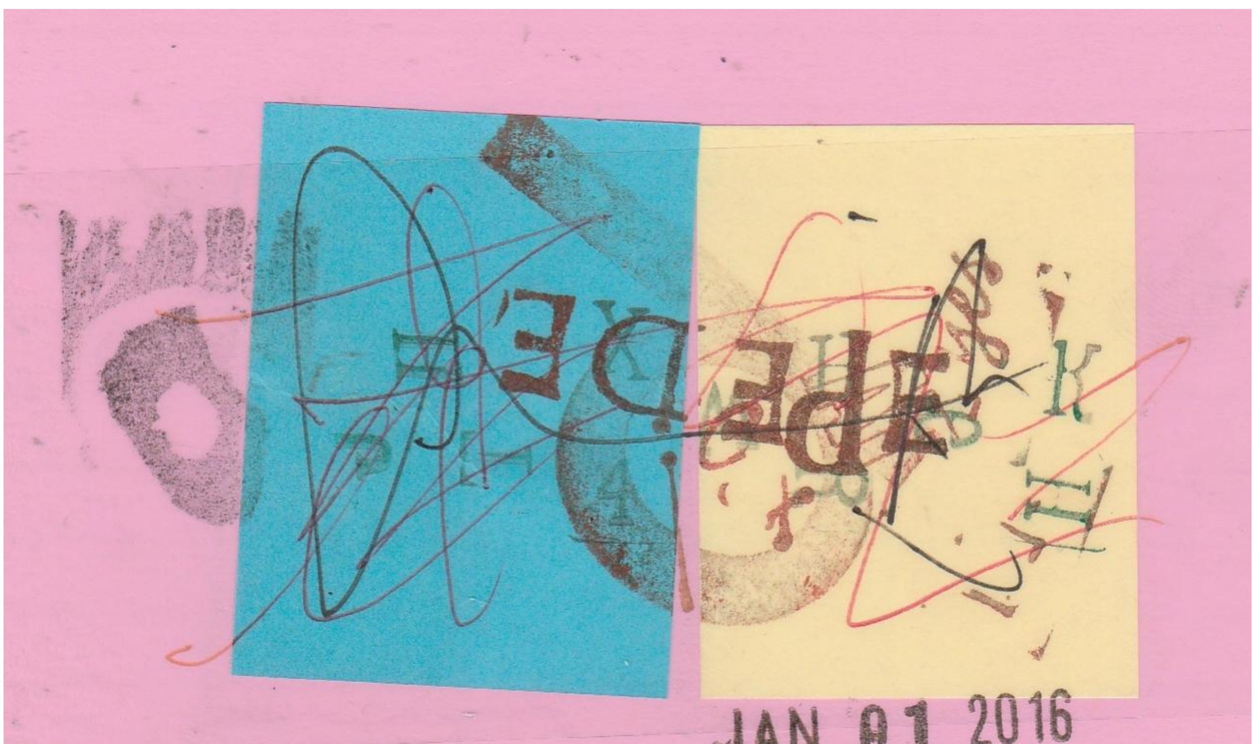



probability
probability \ˌpräb-ə-ˈbil-ət-ē\ n.
MATHEMATICS. The likelihood, or chance, that a given ev
or group of events will occur in a specified way; th
m/(m+n), where m equals all the ways a given
succeed or occur and n equals all the ways it
occur.
The PROBABILITY that a 4 will turn
is one in six, or 1/6.
proboscis \prə-ˈbäs-əs\
ZOOLOGY. Any tub
mals, a long
insects. t
qua
or sub
differen
that rea
The PRODU
profile \ˈprō-ˌfi
EARTH SCIENCE
up a soil; also,
the vertical arra
surface.
The different laye
e different physical
and chemical chara
profundal \prə-ˈfənd-ᵊl
BIOLOGY and EARTH SCIE
aining to the deep-water area
of freshwater bodies, us
limited to areas free of rooted
plants.
Common freshwater clams are residents of the PROFUNDAL zone.
OCT 2 4 2015
Nancy Dye
minimum wage — which would give nearly
700,000 Virginia workers a raise — and
sides with wealthy corporations instead.
Virginia's working families deserve better
than **$7.25 an hour**, and they deserve
better than Nancy Dye.
THE UNITED STATES OF AMERICA
PROBOSCIS
POEM
(SINGLE VERTEBRA)
PROCESS
jim leftwich
525 10th st sw
roanoke, va 24016 usa
A
B
C
Parent Material
PROFILE
JAN 01 2016

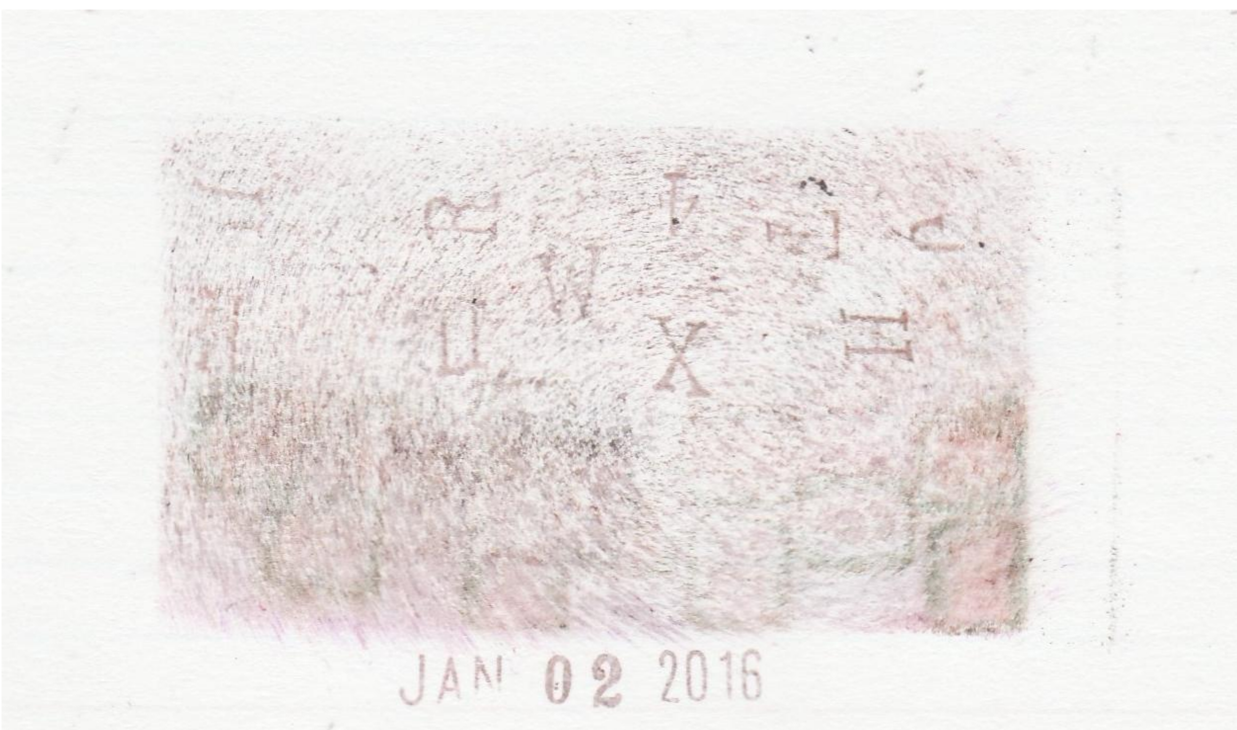

JAN 09 2016




JAN


JAN 01 2016


Mnq
JAN 09 2016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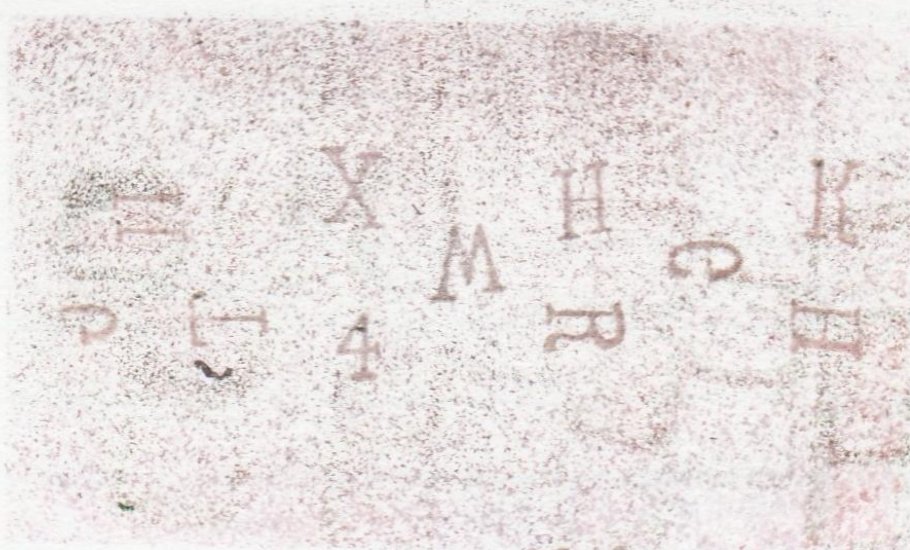
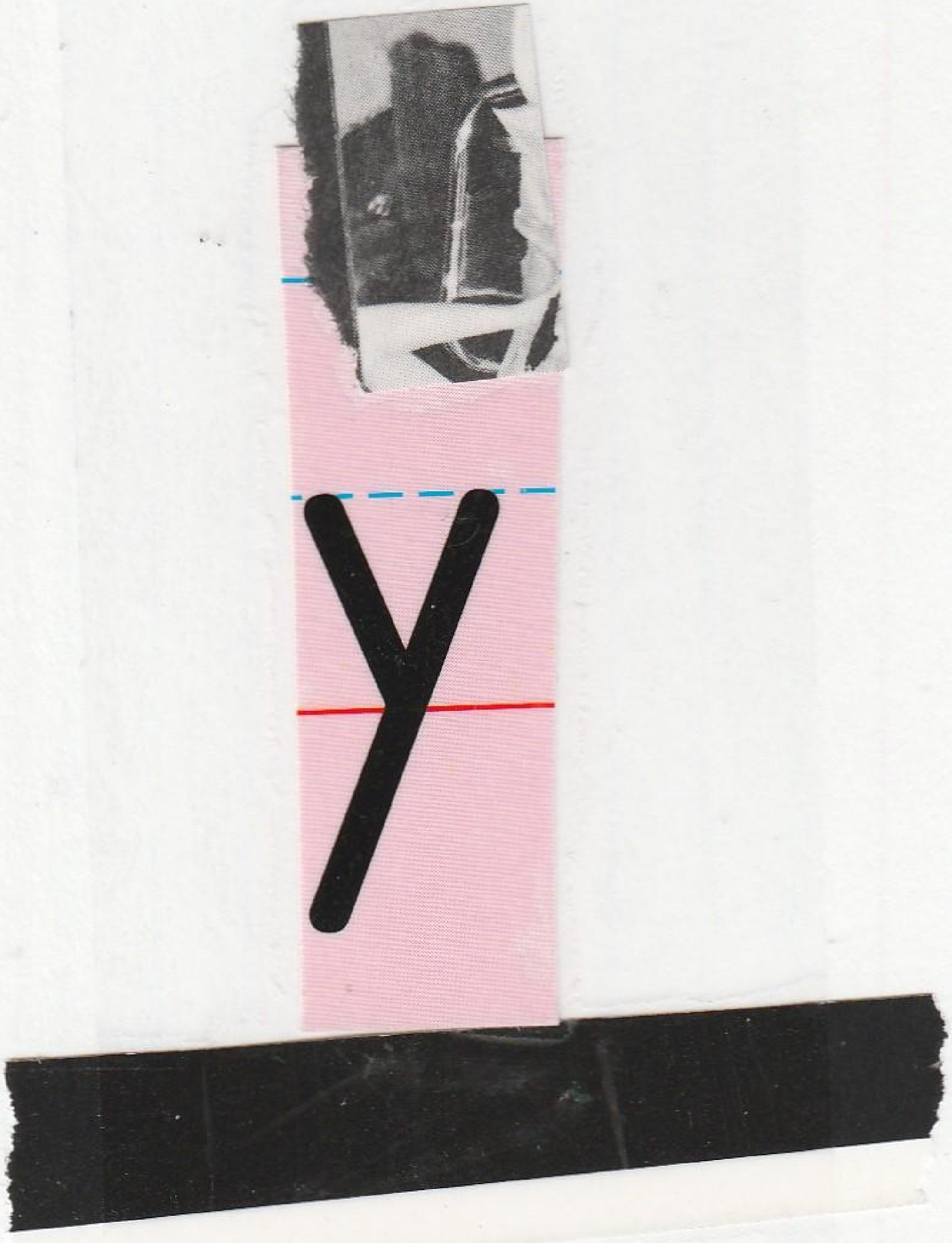


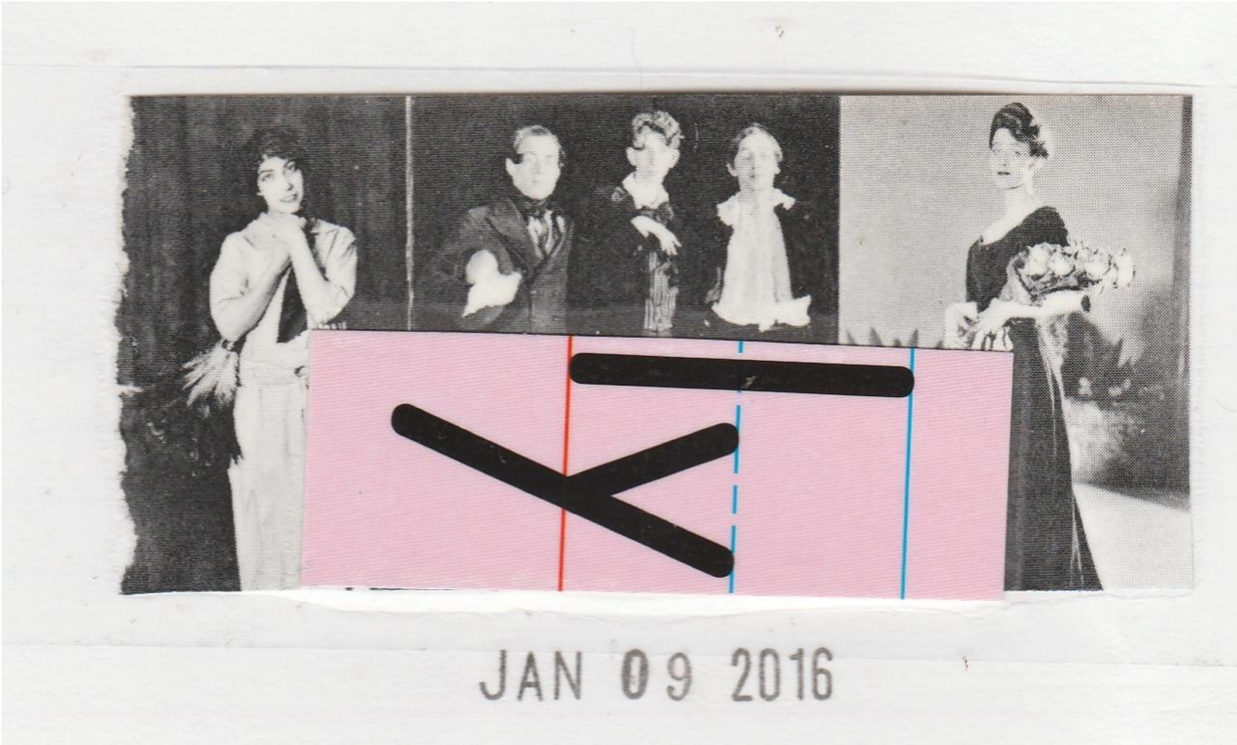
JAN 02 2016

JAN 05 2016

JAN 02 2016

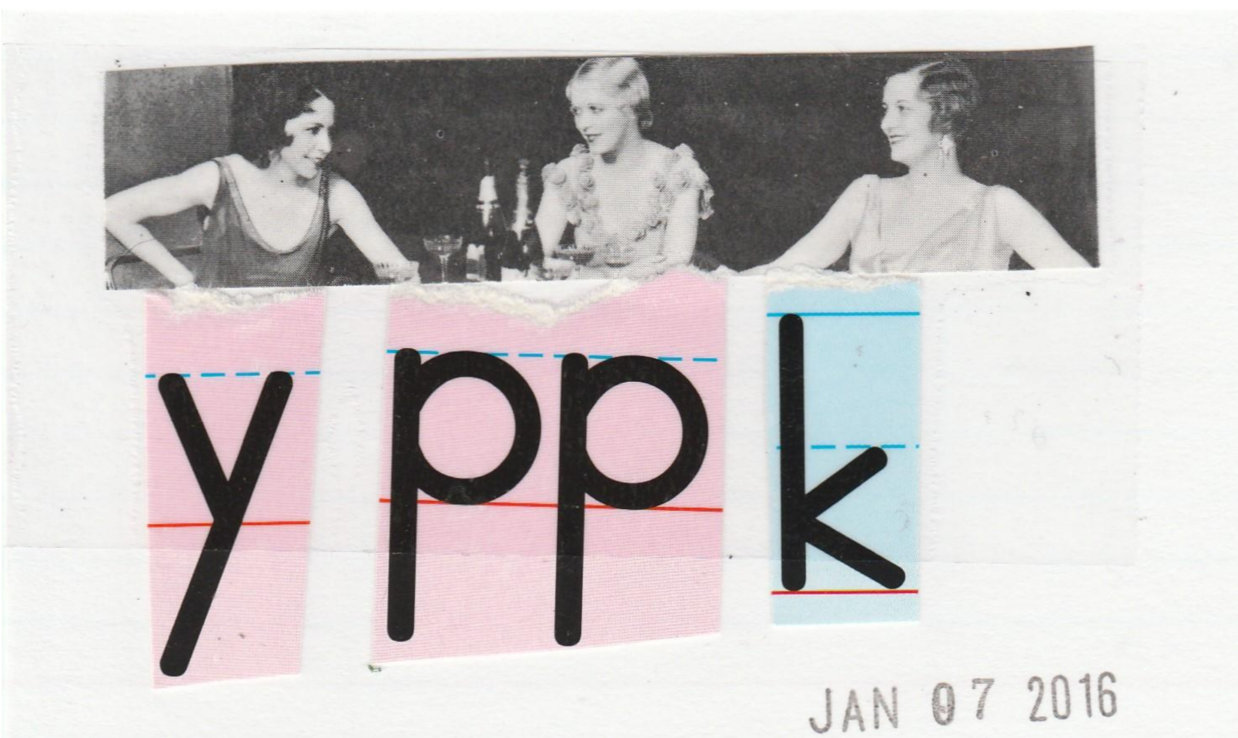


JAN 07 2016


JAN 09 2016


JAN 02 2016


y
JAN 09 2016


yppk
JAN 07 2016

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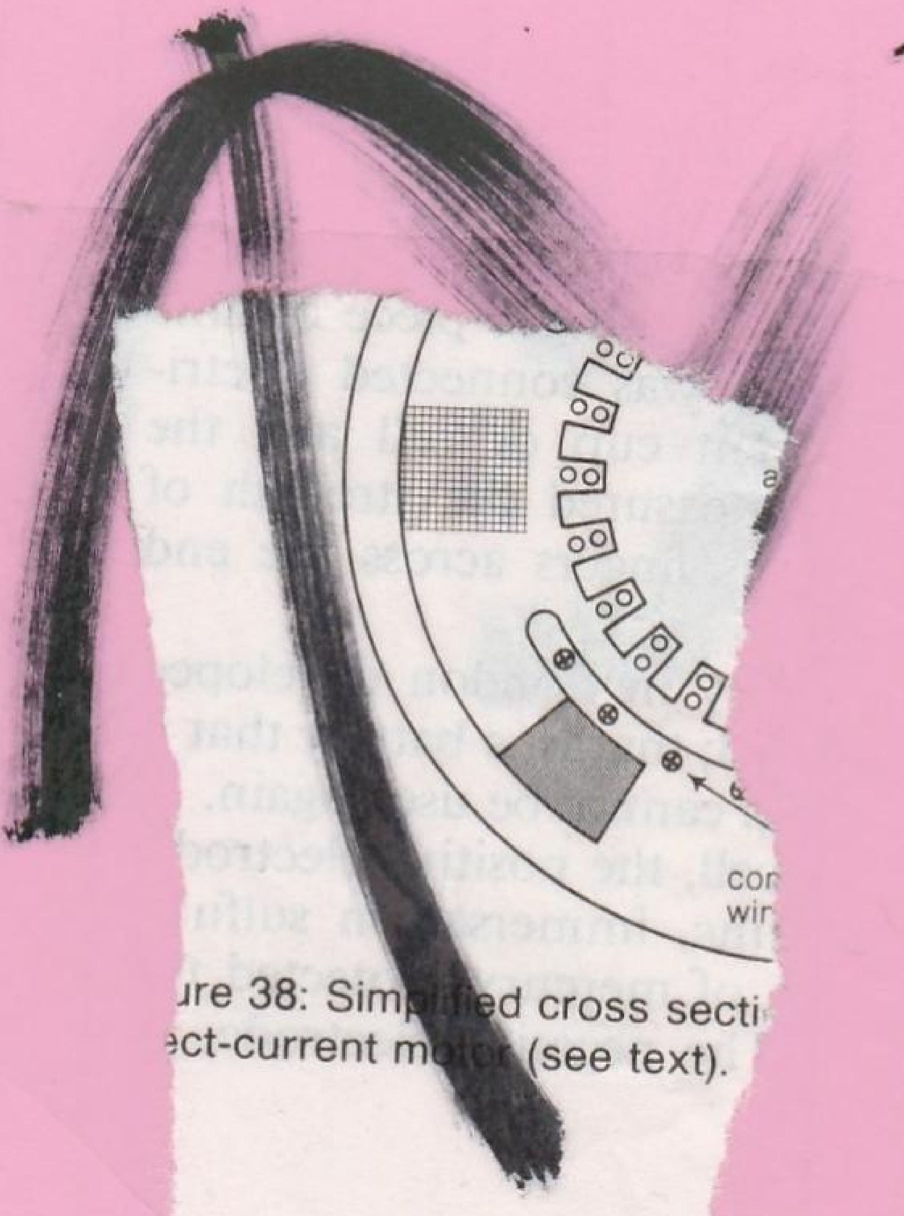
WARD ELLI

JAN 09 2016



JAN 02 2016

TLPress Roanoke VA USA 2021